

Twenty-First International Seapower Symposium

"Global Solutions to Common Maritime Challenges"



United States Naval War College
Newport, Rhode Island
16–19 September 2014

**TWENTY-FIRST
INTERNATIONAL SEAPOWER SYMPOSIUM**

Report of the Proceedings



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Edited by

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**U.S. NAVAL WAR COLLEGE
NEWPORT, RHODE ISLAND**

2015

Editor's Note

Every attempt has been made by this editor to establish a clear and accurate record of the Twenty-First International Seapower Symposium proceedings. Through the use of speaking notes, transcripts, seminar notes, and tape recordings of the speakers or, when necessary, simultaneous translators, the opinions and views of the participating maritime leaders are recorded in this printed text. Slips of grammar, spelling, and wording have been silently corrected and full names and ranks have been added when omitted by the speaker. Square brackets were used to clarify a word or phrase in the text.

The editor acknowledges with great appreciation the valuable support and assistance of John W. Kennedy, and the many people whose support contributed to the success of this endeavor. Their fine efforts made my job much easier and brought this project to a timely conclusion.

Newport
February 2015

J.B.H.



CHIEF OF NAVAL OPERATIONS

8 September 2014

It is my distinct pleasure to welcome you to Newport, Rhode Island, for the 21st International Seapower Symposium (ISS-21). The International Naval Community is well-represented this year and I am confident that we will have productive and energetic discussions in the upcoming days. The schedule of events is designed to advance maritime cooperation at regional and global levels so that together we can find “Global Solutions to Common Maritime Challenges.”

It is my steadfast belief that our open exchange of ideas will serve to enhance maritime cooperation, international relationships, and our shared naval traditions.

Sincerely,



Jonathan W. Greenert
Admiral, U.S. Navy

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Executive Summary

This is a report of the Twenty-First International Seapower Symposium, attended by seventy-two chiefs of navy, twenty-one heads of coast guard, and seventy-five additional flag-level military and civilian leaders from across the world. The Symposium represents the “collective wisdom of the world’s navies and coast guards under one roof,” noted India’s Admiral R. K. Dhowan, Chief of Naval Staff.

Chapter 1 Welcoming Remarks

The welcoming remarks underscored the theme “Global Solutions to Common Maritime Challenges.” Rear Admiral P. Gardner Howe III, President of the Naval War College, stated that since 1969 the symposium has been a forum for global maritime leadership to seek cooperative solutions to common challenges. The need for cooperation has never been greater, emphasized both Deputy Secretary of Defense Robert Work and Secretary of the Navy Ray Mabus. Referring to today’s maritime challenges, Chief of Naval Operations Admiral Jonathan W. Greenert, stated that “none of us can address these alone.”

Chapter 2 Globalization and World Energy

In his keynote address, Pulitzer-Prize winner Dr. Daniel Yergin further pointed out that the world has seen “a doubling in global GDP between 1990 and 2014,” with “billions of people being lifted out of poverty.” Seaborne trade has been the backbone of this globalization. Continued economic growth “will depend on massive shipments of petroleum, natural gas, and coal. Almost all of that growth will be seaborne.” Moreover, Dr. Yergin pointed out, “It points to the central role of navies and the collaborative requirement to help ensure energy security.”

Chapter 3 Panel Discussion on Future Trends and Maritime Security

Moderated by Admiral Dr. Marsetio, Chief of the Indonesian Navy, this panel addressed threats and opportunities relating to cooperative maritime security. “We see humanitarian assistance and disaster relief as such operations that navies can carry out in peacetime to contribute to maritime security,” stated Admiral Katsutoshi Kawano, Chief of Staff of Japan Maritime Self-Defense Force. He also suggested that improving such coalition operations can aid other naval operations.

“Every country shares the responsibility of safeguarding maritime security,” stated Admiral Wu Shengli, Commander, People’s Liberation Army Navy. He proposed a “new concept of maritime security,” based on the 4Cs: common security, comprehensive security, cooperative security, and continuous security.

Addressing piracy, Admiral Mohammad Asif Sandila, Chief of the Naval Staff, Pakistan, put forth that “two common enablers for piracy have largely remained unchanged, i.e., the presence of thriving commerce to prey on and a visible lack of security in some littoral states.” He advocated an international approach to countering piracy.

“The need for establishment of a legal framework, promoting international cooperation, particularly for hot pursuit of illegal, unregulated, and unreported

“fishing vessels” was stressed by Admiral Cissoko, Chief of the Senegal Naval Staff. This would aid the cooperative protection of fisheries.

Chapter 4 Enhancing Coalition Operations

“If there’s a measuring stick for maritime security today, it lies in preventing disruptions that adversely affect prosperity, and protecting life,” stated General James Mattis, U.S. Marine Corps (Ret.), and former Commander, U.S. Central Command. Maritime coalitions are well-suited to meet threats. They “come together, aggregate for a purpose, disaggregate when no longer needed, and reaggregate, again, when needed, and as the situation dictates,” stated General Mattis. “No force is more formidable than when allied by common interests.” Each navy brings quality. “It’s cooperation that brings us the quantity.”

Chapter 5 Panel Discussion on Enhancing Coalition Operations

Moderated by Admiral Jaime Muñoz-Delgado, Chief of the Spanish Naval Staff, the panel addressed ways of enhancing coalitions. Global naval protocols and communications were addressed by Admiral Tan Sri Abdul Aziz Jaafar, Chief of the Royal Malaysian Navy, “particularly looking at the need for common safeguards and means to limit mutual interference and uncertainty with encounters at sea.”

“We are convinced of the importance of establishing and developing a global network for maritime traffic information sharing,” stated Fleet Admiral Julio Soares de Moura Neto, Commander of the Brazilian Navy. It could “improve our capability to coordinate and respond together.”

“We are probably at a turning point in information sharing,” stated Admiral Bernard Rogel, Chief of Staff of the French Navy. “We are shifting from ‘need to know’ to a ‘need to share,’ ” he also stated, and offered ways to overcome the challenge of information sharing in coalition operations.

Addressing coalitions for counterpiracy, Vice Admiral Matthieu Borsboom, Commander of the Royal Netherlands Navy, recommended a whole-of-government approach to tackle the threat on land and sea.

Chapter 6 Regional Maritime Agreements and Global Opportunities

“Regional Maritime Agreements and Global Opportunities” was an address by Admiral Guillermo Barrera, Colombian Navy (Ret.), and CNO Distinguished International Fellow at the U.S. Naval War College. Admiral Barrera examined the recently approved Code for Unplanned Encounters at Sea (CUES), calling it “a great example of regional agreement, with applicability in other regions, and the basis for global standard operating procedures.” He requested participants provide comments so that CUES could be further examined at the next symposium.

Chapter 7 Lessons Learned in the Search for MH370

This panel was presented by Vice Admiral Tim Barrett, Chief of the Royal Australian Navy. “No single nation could have conducted this search,” said Admiral Barrett, referring to the Australian-led, multinational effort to find the missing Malaysian airliner in the southern Indian Ocean. He noted such operations require clear, predictable communications between all parties, enhanced by liaison officers, to establish trust. He also noted that such operations create a massive demand for information, making coordination of public affairs a challenge. And with the need

to replenish other nations' ships at sea, "there is merit in codifying methods for logistics interoperability."

Chapter 8 Maritime Implications of Climate Change

"I don't believe in climate change per se, but I am convinced by the evidence," stated Rear Admiral David Titley (Ret.), who is now Director of the Center for Solutions to Weather and Climate Risk at Pennsylvania State University. That evidence includes NASA's data on global temperature changes, decreasing Arctic ice, rising sea levels, and increasing natural disasters. "We're going to deal with changes in the physical environment, in the context of a whole lot more people than we've ever had," he asserted. These changes will have significant security implications, which Admiral Titley detailed, also offering measures to deal with them.

Chapter 9 Panel Discussion on Maritime Implications of Climate Change

"This is real, it's happening," declared the panel's moderator, Vice Admiral Mark Norman, Commander of the Royal Canadian Navy, referring to climate change. Panel members further addressed the implications.

"Climate change is going to impact New Zealand's maritime security," stated Rear Admiral Jack Steer, Chief of the Royal New Zealand Naval Force. Rising sea levels threaten the naval base in Auckland and the existence of some Pacific island nations. He also noted that "potential shrinkage of sovereignty and the impact on exclusive access to resources will have economic impacts, and could lead to conflict."

To help meet the European Union's targets for carbon emission reductions, Italy's navy is developing new generations of biofuels for its ships, briefed Admiral Giuseppe De Giorgi, Chief of the Italian Navy. "By 2020, the Italian fleet will reduce oil dependency up to 50 percent," he stated.

The opening of Arctic waters has resulted in increased human activity in resource extraction, new trade routes, and ecotourism, noted Vice Admiral Peter Neffenger, Vice Commandant, U.S. Coast Guard. To meet its growing mission demands, the Coast Guard has developed an Arctic strategy.

Chapter 10 Regional Breakout Group Reports

These reports provided each region's concerns and interest areas, as discussed in groups. The regions and presenters were as follows:

- Atlantic Ocean: Presented by Admiral Luis Fragoso, Chief of Portugal's Naval Staff and National Maritime Authority
- Caribbean Sea: Presented by Commander Antonette Wemyss-Gorman, Commander of the Jamaican Coast Guard
- Pacific Ocean: Presented by Admiral Zulhelmy bin Ithnain, Chief of Staff, Submarine Force Headquarters, Royal Malaysian Navy
- Indian Ocean, Gulf of Aden, Arabian Sea, and Red Sea Region: Presented by Admiral R. K. Dhowan, Chief of the Indian Naval Staff
- Norwegian, North Sea, and Baltic Sea Region: Presented by Commodore Sverre Engeness, Commander of the Norwegian Coast Guard
- Gulf of Guinea: Presented by Rear Admiral Jeff Biekro, Chief of Ghana Naval Staff
- Mediterranean, Black Sea, and Caspian: Presented by Vice Admiral Giuseppe De Giorgi, Chief of the Italian Navy.

Chapter 11 Closing Remarks

In closing, Rear Admiral Howe stated, “In the days, weeks, and months to come, we build on the relationships, trust, and partnership that we’ve engendered here. We don’t take them for granted. We look for opportunities, both large and small, to advance them.” Admiral Greenert elaborated further: “We’re part of a global network. There are global solutions out there. We have global problems. Where we can, we should find those solutions. There is this potential energy of almost eight hundred ships, our ships under way every day, doing something in a collaborative manner. Imagine being able to harness that toward common issues around the world.”



Welcoming Remarks

Rear Admiral P. Gardner Howe III, U.S. Navy

President, U.S. Naval War College

Video Remarks: The Honorable Robert O. Work

Deputy Secretary of Defense

The Honorable Ray Mabus

Secretary of the Navy

Admiral Jonathan W. Greenert, U.S. Navy

Chief of Naval Operations

Professor Thomas Mangold:

Good morning. Secretary Mabus, Admiral Greenert, distinguished leaders of navies and coast guards from around the world, we are honored by your presence here today in Newport.

My name is Professor Tom Mangold. I am the Dean of International Programs here at the Naval War College. I'm honored to be your master of ceremonies for the next several days.

It is my great, distinct pleasure and honor to introduce to you the fifty-fifth President of the United States Naval War College, Rear Admiral Philip Gardner Howe III.

A native of Jacksonville, Florida, he graduated from the U.S. Naval Academy and was commissioned in 1984. As a Naval Special Warfare Officer, or SEAL, he has served in a full range of operational and staff billets in the Naval Special Warfare and joint special operations communities, most recently in command of Special Operations Command, Pacific in Hawaii.

He has completed multiple deployments around the world, and participated in OPERATIONS EARNEST WILL, PROVIDE COMFORT, ENDURING FREEDOM, and IRAQI FREEDOM. The admiral graduated from the U.S. Naval Postgraduate School in 1995 with a degree in national security affairs, and from the National War College in 2002 with a master of arts in national security affairs.

Admiral Howe brings a wealth of operational leadership experience to his current role as President of the Naval War College, a position he assumed in July of this year. We are fortunate to have him here at the College, and I'm very pleased this morning to introduce you to the fifty-fifth President of the Naval War College, Admiral Gardner Howe.

Rear Admiral P. Gardner Howe III, United States:

To this very impressive collection of global maritime leadership, good morning. It is my pleasure to welcome you once again, first to the United States, second to this great state of Rhode Island, to the beautiful city of Newport with beautiful weather this morning, to the Naval War College, and to the Twenty-First International Seapower Symposium.

The Naval War College is truly honored to provide the setting for this very important gathering. We hope that we will be able to provide you the time to think and to discuss common maritime challenges and, perhaps more importantly, continue to build the relationships that will help lead to common solutions.

There's always been a special bond between mariners, forged from both the shared excitement and the challenges of life on the sea. Mariners across the ages have felt a kindred spirit among each other.

When serving as the United States Navy's fifteenth Chief of Naval Operations, Admiral Arleigh Burke was reflecting on this special bond, and he commented, "In the navy, when an old sailor looks back, he finds the majority of his friends are naval officers from his own country and from other countries, people he relies upon, people he likes and has fun with, whom he knows and respects and admires, and, above all, men he can trust."

The International Seapower Symposium is a product of this sentiment, recognizing the incredible potential to build on this special relationship among men of the sea. In directing their collective efforts at common problems, Admiral Richard G. Colbert, then serving as the President of the War College, hosted the First International Seapower Symposium in 1969. In the first symposium, there were eighty high-ranking navy officials from thirty-seven different countries, and they included twenty chiefs or deputy chiefs of navies.

In the forty-five years since, the symposium has served as an effective forum to bring together the global network of maritime leadership, to help move relationships to partnerships and to seek cooperative solutions to our common problems and challenges. It's in this tradition that we gather today.

Today, you represent a much larger and more extensive global network. The thirty-seven nations are now 112. Those original twenty chiefs are now seventy-two chiefs of navy, alongside twenty-one heads of coast guard. Also with us are fourteen heads of naval war colleges across the navies and an additional seventy-five flag-level military and civilian leaders from across the international community.

You are clearly an impressive group, one with significant potential. We admire all of you, and we are especially proud of the over sixty delegates here today that are graduates of the Naval War College International Programs. To those alumni, welcome back to Newport, congratulations on your successes. It's certainly my hope that the education you received here has made some element of difference in your country and in your naval service, and that it will continue to do so.

Building on the sentiment expressed so poignantly by Admiral Burke, and in keeping with the spirit of Admiral Colbert's first symposium, let's press on with the business of the week—strengthening our maritime partnerships and addressing our common challenges.

I have the pleasure of introducing our guest speakers this morning, the first being the Deputy Secretary of Defense, Robert Work. Emergent requirements have kept him from physically being present with us today, but he has sent recorded remarks.

Mr. Work is a retired Marine Corps artillery officer, serving faithfully for twenty-seven years, retiring as a colonel. Along the way, he held a wide variety of command, leadership, and management positions. A noted scholar, a published author, and a true naval strategist, he's worked at a number of think tanks in Washington, including the Center for Strategic and Budgetary Assessments, and the Center for a New American Security, where he recently served as chief executive officer.

You may know him from his service in 2009–13 as the Under Secretary of the Navy, the second-ranking position in that department. He is an old friend of the Naval War College, and we're honored to have him share his thoughts with us this morning.

Deputy Secretary of Defense Robert O. Work, United States:

On behalf of Secretary Chuck Hagel, I'd like to welcome you to the Twenty-First International Seapower Symposium. As I understand it, there are seventy-seven chiefs of naval operations in the audience and another thirty vice-chiefs or senior naval representatives. The maritime knowledge and experience you collectively embody is truly astonishing. I'd like to thank you all for traveling from both near and far to help us seek global solutions to common maritime challenges.

I am truly jealous of you. While there may be a more scenic and fitting location than the Naval War College in Newport, Rhode Island, to hold such an important dialogue, I am certain that the Pentagon is not one of them. I am, therefore, very sorry I cannot be there with you today and tomorrow as you build on existing relationships, establish new relationships, share ideas, and learn how our navies can deepen their cooperation.

I say this because, before becoming Deputy Secretary of Defense, I served as the Under Secretary of the United States Navy for four years. Before that, I served as a U.S. Marine officer for another twenty-seven years. I appreciate and understand perfectly both the global value of the maritime commons and the vital importance our naval partnerships play in making sure they remain safe and secure. Symposia, like this one, help achieve these ends.

If anything, now is the time to strengthen and expand our partnerships. I believe we are truly at a historic inflection point. The world is changing at an incredibly rapid pace. New threats seem to be appearing on almost a daily basis.

We, therefore, need to work harder and more collaboratively and more collectively to respond to emerging challenges, to enhance maritime security, and to promote a free and open maritime commons, which is absolutely central to global prosperity. By working to enhance international cooperation on issues such as piracy, smuggling, natural disasters, and other threats, we can improve the security not only of each of your nations but of all of our nations.

I think we can agree that this is as challenging a maritime environment as any we have seen since the end of the Cold War. No one can be absolutely certain where

it's headed or what course to steer. What the future will hold is always a mystery to be revealed to all of us.

But one thing is certain. To help us navigate toward an uncertain future, we will need great leaders to emerge—leaders who can think creatively and strategically; leaders who recognize the need for changes in the ways we operate; leaders who foresee opportunities in new technologies; leaders who can create a climate where new ideas and concepts can be debated, evaluated, and adopted; and finally, leaders who accept that no navy, however powerful, will be able to solve all maritime challenges on its own.

Adapting to change is never easy, but adapt we must. If history is any guide at all, naval officers will be up to the challenge. Our national leaders and our people expect us to be out in coastal waters or over the horizon every single day, where we share a commitment to protect unique and shared maritime interests. Let's exploit our common commitment to change for the better of all global citizens.

Posted in the gangways of U.S. Navy ships are the “Ten Commandments” of damage control. Commandment number ten says, “Keep cool. Don’t give up the ship.” So, let me leave with a concluding thought: Remember, no matter what the world throws at us, keep cool and don’t give up the ship. Together, we can work together to accomplish astonishing things.

In closing, on behalf of Secretary Hagel and the American people, I want to thank all of you for your service, professionalism, dedication, and partnership. I’d like to wish all of you fair winds and following seas. Have a great symposium.

Rear Admiral P. Gardner Howe III, United States:

I am honored to introduce and welcome back to Newport our second distinguished kickoff speaker, the seventy-fifth Secretary of the Navy, Secretary Ray Mabus. Secretary Mabus has been long in public service. He has served as the governor of Mississippi and ambassador to the Kingdom of Saudi Arabia. In 2009, he was sworn in as the Secretary of the Navy, responsible for the Navy and Marine Corps team. As Secretary, he has made energy reform, acquisition excellence, and unmanned system development key issues of focus for the Navy and Marine Corps.

He’s a graduate of the University of Mississippi. He holds a master’s degree from Johns Hopkins University and a law degree from Harvard Law School. As a member of that special bond of the sea, he served in the Navy as a surface warfare officer aboard the cruiser USS *Little Rock* (CLG 4).

Secretary of the Navy Ray Mabus, United States:

Since I have the honor and privilege of leading the United States Navy and Marine Corps, it’s not surprising that I want to talk about global security from a maritime perspective. But, with this audience, I want to focus on something that I’ve been thinking about a lot lately and that’s the relationship among maritime security and political stability and economic progress.

In our world today, rapid change is more than just the new normal. The pace of that change increases seemingly daily. Partly in response to both the pace and the change itself, our world is also filled with increasing uncertainty.

Amazing technological advances are expanding opportunities, lengthening our life spans, and bringing us closer together, but the shrinking and flattening of our

world, in some cases, has led to increased friction, social disorder, political upheaval, and increased risk from asymmetric threats.

The importance of the maritime domain in international trade and global affairs has never been greater, as Deputy Secretary of Defense Work said. You know all the statistics. Eighty percent of the world's population lives within sixty kilometers of the sea. Ninety percent of all global trade goes by sea. In this Internet-connected world, 95 percent of all voice communications and data go under the ocean via cables, and this isn't just phone calls and e-mails. This is all the data that keep the world's financial system going. Even if you live in a landlocked country, in this twenty-first century you're dependent, almost absolutely, on the world's oceans.

As you all are keenly aware, we live in an age of globalization and worldwide trade. The shelves of stores in the United States like Target or the LuLu Hypermarket of the Middle East or Seibu Department Stores in Japan are stocked through just-in-time delivery, with products that come from all over the world.

Our commercial and economic success across the globe is still tied to the sea. The economic success I'm talking about is jobs and prices, and availability of goods and services. Millions of people around the world have jobs directly tied to seaborne international trade. In the United States alone it's more than forty million jobs—and it isn't just people who work in ports and own ships. Farming, fashion, energy, electronics, and manufacturing of all kinds are dependent on imports and exports from around the world.

At Navy, we analyze the impact of a major maritime choke point being closed, thus restricting trade. Within about six weeks after such an event, the price of gasoline would quadruple and a liter of milk would triple.

Most of the nations represented here today sit astride the world's maritime transit routes and straits, but all of us understand just how vital these sea lanes are.

Leading economists in some of our universities have linked the stability and smooth function of our globalized economy to the presence of our navies and the collective work in keeping those sea lanes open for legitimate, peaceful commerce for the past seventy years.

I want to repeat one phrase, "the presence of our navies." Uniquely, presence is what navies around the world provide, ready for any challenge that may come over the horizon. Unlike garrison forces, which are called out only in times of need, a navy's tempo is not that different in times of peace compared to times of conflict. As a result, naval forces can get where they need to be very quickly. A lot of times, they're already there.

Because our presence is so constant, we don't escalate tensions; we ease them. We bring everything we need with us to accomplish any mission that's given, from deterring an adversary, or defeating one, to providing humanitarian assistance and disaster relief. And we can stay a long time. It's the job of navies to be where it matters, when it matters.

In the United States Navy and Marine Corps, I have focused on how we support our people, build the right platforms, power those platforms, and develop and strengthen international partnerships. Those four priorities—people, platform, power, and partnerships—are central to successful execution of our mission and our ability to maintain a global presence.

In the twenty-first century, as Deputy Secretary of Defense Work said, no single nation has the capacity to protect and defend the global system, keep the sea lanes open, and protect peaceful commerce. All nations and all people, seeking freedom of movement, trade, and security, have to carry their share of the responsibility.

A collective effort will ensure that our navies provide that necessary presence. Whether in blue water or brown, we can help assure stability and security, by creating and strengthening global relationships, providing humanitarian assistance and disaster relief, deterring adversaries when possible, and meeting and defeating threats when necessary.

We have to remember that collective security is just that—collective. It isn't just the economic benefits in our individual countries that matter. We also benefit from the way that shared economic success helps us limit conflict and war.

Maritime instability can cause and contribute to unrest and violence, stoking the fires of conflict. By helping secure the world's oceans and responding to crises early to limit escalation, our navies, our marine corps, play a vital role in the world.

Our maritime tradition is as old as human history. From harbors near the Arctic Circle, around the Mediterranean, through the littorals of Asia and shores of Africa, the Americas and Australia, human civilizations have launched one great fleet after another toward the horizon.

In this country, those who founded America recognized the importance of the Navy. In fact, our Constitution mandates that Congress shall establish and maintain a navy.

Again and again, naval forces have proved themselves the most immediate, the most capable, the most adaptable option when a crisis develops.

Whether we're exercising together in the Baltic or the Pacific, operating against pirates in the Gulf of Aden, or cooperating in Asia to provide disaster relief, as we did in the aftermath of Super Typhoon Haiyan, the strong cooperation between America and all nations represented here today makes a difference all over the globe because our presence matters.

Let me give you just a few examples of our operations with many of you over the summer. I travel a lot in this job to visit our men and women in uniform around the world, but also, and very importantly, to work with you and your government leaders.

In my five years as Secretary, I've been to 120 different countries and traveled over nine hundred thousand air miles. This past summer, I had the honor of visiting a lot of people in this room on two trips around the world.

In Hawaii, in the central Pacific aboard our new littoral combat ship, I had a chance to see and to observe parts of RIMPAC [RIM OF THE PACIFIC EXERCISE] and see our navies working together at sea. The navies of twenty-two countries participated in the largest maritime exercise in the world, including friends and allies from Asia but also nations from much further away, like the Norwegian Navy, who sent a warship all the way from the Baltic Sea. During this exercise, these forces worked together on everything from search-and-rescue and humanitarian missions to counterpiracy tactics and special operations training.

On that same trip, we stopped in Singapore and I was there for the start of the twentieth annual [Cooperation Afloat Readiness and Training](#), or CARAT, with the Republic of Singapore Navy. The connections between the nations of the Pacific and

the Indian Oceans will be critical to maintaining security in that area and stability in the future. Exercises like these help build positive and trusting relationships.

While I was in Singapore, seeing the start of that exercise reminded me of two things. First, while there may be a lot of talk about our rebalance to the Pacific, in reality, the American Navy has always been there. Ever since our frigate USS *Essex* sailed for Southeast Asia in 1800, our Navy and Marine Corps have worked with partners and friends in the region. Second, it demonstrates the vital importance of co-operation in the Pacific, in the littorals, all through Asia, and in the Indian Ocean. Developing a code of conduct and building trust and methods of communication among the navies of the region is vital to future stability.

As we crossed the world, I also stopped to meet with partners in Eastern Europe. While I was in the region, our Marine Corps [Black Sea Rotational Force](#) was involved in PLATINUM LION, a series of exercises on the shores of the Black Sea. Working with many of our NATO [North Atlantic Treaty Organization] allies and partners from Europe and Central Asia, these exercises help us build stability on the eastern frontiers of Europe and encourage security in a region that has been in turmoil for several months. Our Marine Corps Black Sea Rotational Force regularly moves between countries, training with partners, monitoring security developments there, and building our ability to operate together for future contingencies.

Our destroyers, two of which are now based out of Rota, Spain, and two more will come next year, have also been conducting patrols in the eastern Mediterranean and operating in the Black Sea, providing that ever-critical presence. The annual multinational exercise [SEA BREEZE](#) has just finished there, helping us all build security and stability.

Earlier in the summer, I also visited the [EXERCISE BALTOPS](#) [BALTIC OPERATIONS], and had discussions with navies and with leaders in that region. Our continued involvement in the Baltic demonstrates how important the waters of Europe remain to international security, and show how the strength of NATO matters in the twenty-first century, just as it did in the past.

I've also had the opportunity this summer to visit with a number of our partners in Africa. The world's attention has been drawn to Africa, not the least because of the challenges of maritime security along the Horn of Africa and in the Gulf of Guinea. Africa has more than sixteen thousand miles of coastline on two oceans and one sea. It has four major maritime choke points, vital trade routes, and fertile ocean resources. The growth and development taking place in Africa today will have, and has had, significant impact on the maritime world.

On that trip, I went to see our Special Purpose Marine Air-Ground Task Force at its bases on Morón, Spain, and Sigonella, Italy, and saw, firsthand, how it's engaging with Africa, and responding to crisis, as it did recently by supporting our embassy personnel in Libya.

And just yesterday, here, a lot of West African Chiefs of Naval Operations (CNOs) met for a dialogue about security in and around the Gulf of Guinea and developed forward-looking plans to work together in that region.

Last month, I visited USS *America* (LHA 6) in South America as it made its way through Chilean waters through the Strait of Magellan.

Earlier this year, I visited Australia, New Zealand, and some of the islands in the southern Pacific, to see how these nations, and many more, are working together on the concerns we all share.

Maintaining that naval presence for all of us is even more challenging today because of the fiscal environment in which we live and operate. This is true for virtually everybody. Like just about every country, the United States is taking a much closer and a lot more stringent look at our budget.

But a tighter defense budget doesn't and shouldn't mean a weaker defense, or a reduced commitment to security. In fact, even with fewer dollars, our navy is building more ships, because we've changed the way we do business. We've used some of the basics of sound business and are building more ships for less money.

The reality of cooperative security, and maintaining this global system that we all rely on, is that everybody has a critical and important role to play. The world is safer, more secure, more successful when we stand together. A recent study by our Naval History and Heritage Command entitled *You Cannot Surge Trust* reinforced that fact.

Naval operations are fundamentally human endeavors. Success or failure is based on professional relationships and human decision making as much as it is defined by technology or hardware. People and partnerships matter just as much as platforms.

Many of those partnerships have been forged here over forty years, at the International Seapower Symposium hosted at the Naval War College. As the President of the War College said, so many of the people in this room have also been here in other capacities, studying, learning, meeting each other, growing up together in our sea services.

Engagement—among our officers, navies, the leaders of the world's naval forces—is a central component of building those critical human connections. Meetings of our senior leaders and bilateral and multilateral exercises are what build the international relationships, interoperability, and the trust central to our globalized world. And sailors have a lot in common with sailors. Doesn't matter where you're from.

One of the heads of our partner navies in Asia, who's here today, once offered me his view, which I've quoted many times, of the difference between soldiers and sailors. "Soldiers," he said, "by necessity, focus on boundaries and obstacles, man-made or natural. They're constantly looking down at the ground. Sailors, on the other hand, look out. They look to the open sea. They see no boundaries. They see no obstacles. They look out and see nothing but possibilities." All of you here today are sailors and marines. You're focused on that horizon, on possibilities, on future opportunities.

All of us in this room face a very similar task and have almost the same job. One of the jobs that we have is explaining to our governments and to our citizens why navies matter, because when we're doing our jobs, usually we're a long way from home, and we're certainly out of sight of the people that we are protecting and defending. We have to make sure that they understand how important the maritime world is to our success, economically, and to our security. We have to encourage them to look outward, across the sea, to that horizon.

So, working together, sharing our security responsibilities, and maintaining our presence around the world to ensure the continuation of growth in our international economy, I have no doubt that, together, we'll meet every challenge that comes over that horizon in the twenty-first century.

And we have to remain, as the unofficial motto of the United States Navy goes, *semper fortis*—“forever courageous.” And, as the United States Marine Corps motto proclaims, *semper fidelis*—“forever faithful.”

Rear Admiral P. Gardner Howe III, United States:

For my third and final introduction this morning, it’s my honor to introduce our host for the International Seapower Symposium, the thirtieth Chief of Naval Operations, Admiral Jonathan Greenert.

A native of Butler, Pennsylvania, Admiral Greenert has served at every level of command, to include command of USS *Honolulu* (SSN 718), Seventh Fleet, U.S. Fleet Forces Command, and as our Chief of Naval Operations since 2011.

Ladies and gentlemen, please join me in welcoming the Chief of Naval Operations, Admiral Jonathan Greenert.

Admiral Jonathan Greenert, United States:

Thank you, and good morning.

It was absolutely tremendous to see all of you last night, and your spouses. Gardner, thanks for the introduction. Tom Mangold, thank you so much to your collective staffs, who’ve done a wonderful job putting this together. I’d like to thank Secretary Mabus, who is a great partner, a great boss, and a man with great interest in what we are here to do, what we’re about today, as well as Deputy Secretary Work, who sent us that good video.

I’d like to welcome and acknowledge Admirals Ferguson, Gortney, Harris, and Howard—my guys, if you will, your partners out there around the world. They are my Navy component commanders and my Vice Chief of Naval Operations. They’ll be here through the week. I encourage you to engage with them. We’re pretty close. They tell me what they need. They have no problem with that. If there are needs, please share with them, as well as in the conversations that you and I will have.

I am really in awe and in appreciation to see so many heads of navies here today and delegates, heads of coast guards, and people representing their navies and countries. Meeting you last night, and just going through bios, and the time I’ve had in my tenure to work with you—it humbles me. I’m very pleased to work with you.

As Secretary Mabus and Deputy Secretary Work mentioned, we have a lot of work to do. But there’s no better group of people out there, leading around the world. I’m honored to be with you.

I’d like to welcome first-time attendees, the head of the People’s Republic of China Navy, as well as the head of the Madagascar Navy. It’s very good to have you aboard, joining the collective group here.

As Gardner mentioned, the first International Seapower Symposium was in 1969, forty-five years ago, and many of those delegates were veterans of World War II. Think about that, when this thing all started. The world was pretty darn different then.

We were in a Cold War, but our predecessors recognized the value of international dialogue. Gardner quoted Arleigh Burke, who we feel really got us into this idea of international engagement and partnership, and the value that it would bring to us.

The need is more critical than ever before. Secretary Work mentioned it. Secretary Mabus mentioned it. You all understand it. But I want to underline it, if you will, as I talk about what I think we can do together today.

The International Seapower Symposium is not a stand-alone. Rather, it is part of a continuum. I see many of you at other sea power symposia, and they are very important, too. I suggest we build on the progress from these other forums that we have: the [Inter-American Naval Conference](#), [Western Pacific Naval Symposium](#), International Maritime Seapower Symposium, [Regional Seapower Symposium](#), [Indian Ocean Naval Symposium](#), [IMDEX](#) [International Maritime Defence Exhibition], [DIMDEX](#) [Doha International Maritime Defence Exhibition]. All of these have great value. We should learn from each and bring the lessons learned forward.

It's about networking. It's about finding partners—in and out of uniform—that we can trust and have confidence in working with, building that trust and confidence, learning to take risks with each other, sharing ideas and perspectives, and disregarding the size of navies. Every single person here has value that we need as a collective group. All of you have fairly unique and different challenges. Everyone here is a leader, and everyone here can learn from others.

Let me touch on a few things, then we'll start rolling into the meat of this Seapower Symposium. A little bit about what we have in common—what I think we can work on. First, we, the collective group here today, represent 113 different nations—112 plus your host, the United States. There are different languages, different cultures, different histories, different governments, different politics, and different policies that we, in uniform, work under and for.

That said, we have a lot in common. The common environment is the sea. The common interests are stability and economic growth. The common responsibility is security of our homelands and security of the seas. And we have common challenges and they are numerous.

The physical environment is the sea, and we here call her the “cruel mistress,” the one you can’t be sure of, the one you really can’t count on all the time. There are no politics with the sea. It’s agnostic about religion. And she doesn’t care what your history with her is. We all marvel at the power and beauty of the sea. But, the fact remains, collectively, our countries have lost more ships at sea due to storms than to any battles.

It's the international medium, and our navies will frequently interact, because it is where we travel. It's an ungoverned space. It's the global commons. It's unique, as the Secretary said, in this business that we do as naval officers. The sea has no borders.

And we have common interests. All of us raised our hand, in some manner, took an oath to protect our homelands, the sea, and the security of the sea lanes. We all want prosperity. We want the global economy to grow. We all benefit from the open global trading system. The Secretary said 90 percent of our trade goes by sea, and those shipping lanes are critical for the world economy. Disrupt it in Asia, it affects Africa. Disrupt it in Europe, it affects South America, and vice versa. We are hyper-connected. We're not just regional. We can't survive alone, in just one given region.

Again, we have common responsibilities, to ourselves and to our nations. We all organize, train, and equip, and we send to sea, capable ships and crews. We are all responsible for recruiting, training, and exercising those people so that they can go to sea and operate safely. It is our job to instill confidence in our sailors, and make them proficient at sea.

But, most important, we promote good order at sea. We abide by international law. We are the face of our nations. How we act and react at sea is going to reflect

on our nations. And we should interact in a predictable and a professional manner. When our folks pass each other at sea—whether a small boat, merchant, or whatever—I don't think they look for the company. They look for the flag. We are the faces of our nations.

We have common challenges, as I mentioned: maritime terrorism; transnational criminal organizations; piracy; trafficking, including narcotics, people, and weapons; natural disasters, a lot recently; the whole safety of life at sea; awareness of the maritime environment—that's what we all really want—and the protection of sea lines of communication.

None of us can address these alone. We just can't do it. We don't have enough resources. We need the collective resources, capabilities, skills, and awareness that each of us has in some unique way in our areas of responsibility. And we need a coordinated effort.

These common challenges bring us common opportunities, though. Let's look in these series of Seapower Symposia and meetings to find common causes and those opportunities we have to strengthen our individual and collective skills in the profession of being a sailor.

Many of us have unique ideas on how to perform humanitarian assistance, disaster relief, search and rescue, maritime security, counterpiracy. Some are better than others. Some do this incredibly well; others stumble. Let's bring these ideas in here and share them.

And information sharing and working together when a crisis hits—as we're finding, time is of the essence in crises. You wait two, three, four, or five days to get organized—this can mean casualties at sea and loss of information.

To seize these common opportunities, we need a global network to enable the power of collaboration, pool capabilities and resources for the common good, and be a flexible and adaptable framework at sea.

The minimum requirements to participate are not much—no special equipment, no formal agreements, although formal agreements can be made, if desired. You've got to be willing to collaborate. And anyone can plug and play if we stick together and talk about this. We already are, in essence, a global network.

I say to my guys, go out and take a snapshot at sea. How many ships do we have out there, maybe greater than about seven hundred tons, at any given time, that we know are involved in some sort of operation where nations are getting together? That number's about eight hundred ships. Remember the old thing about a thousand-ship navy? Somebody said, that's just a number. We're almost at that number. About eight hundred ships on any given day are out there, and the linkages are pretty strong. They're out there in places that are still growing and coming together.

As the Secretary mentioned we've had successes, for example after Super Typhoon Haiyan; the [United Nations Interim Force in Lebanon Maritime Task Force](#); [Combined Task Forces 150, 151, 152](#) out in the Fifth Fleet; the operation to search for the Malaysia Airlines Flight 370; the operation for the prevention of chemical weapons. It goes on and on. Those operations go around the world.

A variety of regional networks are out there. They're formed to deal with local, sometimes regional, or sometimes global challenges. They're under no one single particular command and control or power.

This week, we're going to have lectures, panels, briefs, regional breakouts, side-bars, and tours. Let's take that opportunity to look at the fundamental issues, future trends in maritime security, enhancing coalition operations, and maritime implications of climate change.

Let's look for the regional solutions and initiatives. Let's find out what you have that we can apply elsewhere or everywhere. Let's discuss and collaborate, spend time together, getting to know each other, build on those personal relationships, share insights, and listen and learn.

If you assume that each of you who is a chief has about thirty years of experience, we have about 2,500 years of maritime experience here in the room, where we'll be for this week. So let's chart the course, set the priorities and goals, put some things down, and get that continuity going.

On behalf of my Navy, my nation, and the War College, I look forward to the upcoming dialogue.

Globalization and World Energy

Dr. Daniel Yergin

Vice Chairman, IHS

Professor Thomas Mangold:

It is my pleasure to introduce Dr. Daniel Yergin, Pulitzer Prize-winning author, speaker, and economic researcher. He is cofounder and chairman of Cambridge Energy Research Associates and Energy Research Consultancy, which is now part of IHS Incorporated, and he currently serves as vice chairman.

He is author, or coauthor, of over a dozen books; the best known are *The Prize: The Epic Quest for Oil, Money and Power* and *The Commanding Heights: The Battle for the World Economy*.

Both of those best sellers were turned into multipart PBS/BBC television documentaries. Dr. Yergin holds a BA degree from Yale University and a PhD from Cambridge.

We are delighted to have Dr. Daniel Yergin speak.



Dr. Daniel Yergin provides the keynote address.

Dr. Daniel Yergin:

When you were introducing me, I realized the name of the company I'm from, IHS, isn't known to you, but you'll know *Jane's Fighting Ships*. *Jane's* is part of our company. While I've written a number of books, I did not write *Jane's Fighting Ships*.

Secretary Mabus, Admiral Greenert, Admiral Howe, distinguished admirals and generals and distinguished guests from 113 countries, it's an honor to be at this unique institution, the Naval War College, and to participate and contribute to the Twenty-First International Seapower Symposium. This is the most important gathering of naval leaders in the world.

There's a certain spirit that is present on this campus, and that, of course, is of Admiral Alfred Mahan. He was very much a man of his times. When he moved here to Newport and picked up his pen to reflect on the great highway and the wide commons, he was reflecting not only on sea power in history but sea power in his own times. He was a man of the first age of globalization, the railroad, the telegraph, and, of course, the steamship.

There were many challenges in that era, not only the challenges at sea, but also the challenges on land. One specific example occurred on an afternoon in 1876 in Ireland, when a Scottish railway engineer named Sandford Fleming missed his train connection. You might ask, what does somebody missing his train connection in Ireland have to do with the concerns that you have? Tens of millions of people have missed train connections in the years since.

The reason is that experience in 1876 tells us something important about globalization, one of the main subjects of this symposium, about the collaboration necessary to achieve and support an advancing, successful, globalized world.

In 1876, almost every town and city had its own time, depending on when the sun was at the top of the sky. And ships calculated on astronomical time. That was fine in the era when the fastest you could go was determined by the pace of horses' hooves, or the power of winds and tides, but it didn't work in this new era of the steamship, railroad, and telegraph. Sailing time across the Atlantic had been cut from forty-five days to seven or eight days.

The reason Sandford Fleming missed his train is because everybody kept their own time, and schedules were not coordinated because it hadn't been necessary until you had these kinds of communications. This clash, between local time and national and global trade, had become a serious problem.

Eight years later, in 1884—the year before Admiral Mahan moved to Newport, I believe—an international congress convened to try to solve this problem, in response to the efforts of Sandford Fleming. There were some bitter disagreements. Should the prime meridian pass through Greenwich in England, or through Paris? After careful and laborious negotiation, it was decided it would go through Greenwich.

That prime meridian conference of 1884 laid the basis for time zones, with the hope that it would meet “the acceptance of generations which are to follow.” That's pretty much what happened. Those are the time zones by which the world largely operates today.

The relevance is that it embodied the global cooperation and rule making required to ensure success of that first age of globalization, the age of Alfred Mahan, in the latter half of the nineteenth century. That first age was an extraordinary age of expansion in trade and communications. It was a great challenge to achieve that

kind of cooperation. New circumstances, new technologies, new connections—all these required new forms of cooperation and new rules of the game.

That was a challenge in that first stage of globalization, and that is a great challenge for the world today in a second age of globalization, with all of its promise and its great risks.

My aim is to do three things:

- Help understand the forces and significance of contemporary globalization that Secretary Mabus talked about and the hyperconnected world that Admiral Greenert talked about. This is an age when navies both defend and advance national interests. At the same time, they are the guardians of the global economy, from which their national economies benefit so much.
- Focus on a particular aspect of globalization that is crucial in the world today, so relevant to the missions of the world's navies, and the lifeblood of the world economy: the flow of energy that supports our U.S.\$70 trillion global economy.
- Lay out what energy security means in the twenty-first century.

CONTEMPORARY GLOBALIZATION: GLOBAL TRADE TAKES OFF

First, let me begin with globalization. I want to examine this with the recognition that things can go wrong, and sometimes badly wrong, with a cost that is paid over many decades.

Nothing so dramatically demonstrates how things can go seriously wrong than the First World War, this year being the centenary of its beginning. As hard as it is to believe now, that summer of 1914 was considered a time of peace. In late June of 1914, Britain's Royal Navy made a friendship visit to the German ports with the motto "Friends in the past, friends forever." Five weeks later, those two countries, and the world, were at war. The death and devastation were like nothing the world had ever seen before.

Just prior to the war, a British writer, Norman Angell, had written a book called *The Great Illusion*. It was highly influential. It was said then, [as it's said] even today, that it was thought that a war could not happen, because the world was too connected—to use Admiral Greenert's words, too hyperconnected.

That's not what Angell said. Rather, he said that if a war did occur, it would be a disaster, much greater than any could imagine, because nations had become so interconnected. He was prophetic. War did follow with a vast disruption of the global economy and world trade.

Instead of globalization, you had three decades of what we might call de-globalization. Instead of economic growth, you had trade wars, the Great Depression, and the Second World War.

A great historian once called the First World War "the well-spring of our discontents." I think on the hundredth anniversary of its beginning, to some degree, that's still true. We see some of the crises unfolding in the world today have roots in that war, in its outcome, in its settlement. Look at ISIS [Islamic State of Iraq and Syria], seeking to destroy the state system in the Middle East that emerged out of the First World War.

Look what's happening with Ukraine and Russia today. That blowup in eastern Ukraine, coming just after a successful Olympics, reminds us, again, how suddenly and dramatically things can change in relations in Russia. It, simply, wasn't on the agenda a few months ago.

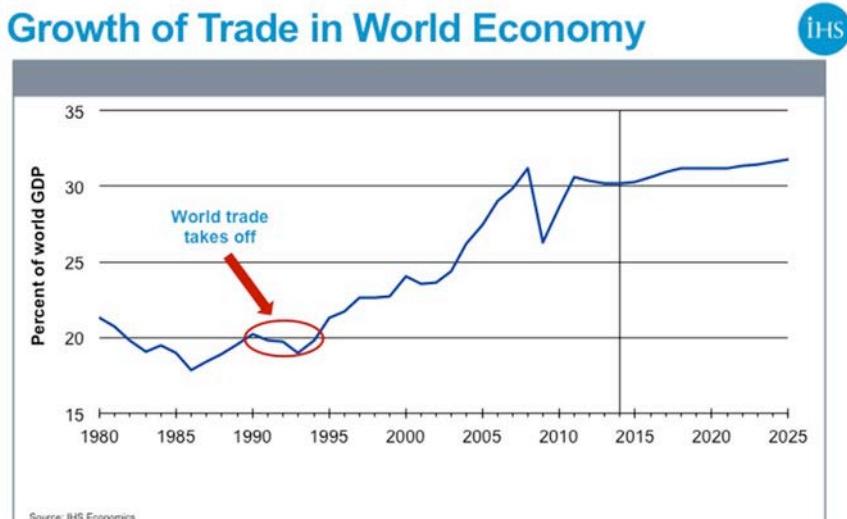
Lessons do get learned from history. After World War II, wise statesmen sought to apply lessons of the previous three decades and re-create the world economy, re-create the foundations for a world order and an open trading system. And they succeeded.

I made a list of the economic miracles that began in the 1950s and '60s: Germany, France, Italy; and then the miracles in Asia, Japan, the Asian Tigers, China, India, at least for a time; and perhaps to come in Africa. The characteristic of all of these economic miracles was an integration of global trade and open markets. This is what established the foundations for the second age of globalization that really began, at least, from the late 1980s and early 1990s.

What happened? Technology—the cost of communications fell to virtually nothing, the speed of computing. From a maritime point of view, containerization. Rapid growth of air travel and air freight. Phenomenal opening of markets. Reducing trade barriers, lowering of trade barriers around the world. Financial linkages that had not been imagined, the rise of what we might call the global shareholder; pension funds, in your countries, investing halfway around the world—wouldn't have thought of that happening twenty or twenty-five years ago. Of course, the end of the Soviet empire occurred, and there was greater confidence in markets.

The indicator was the junction of change about a quarter of a century ago. Growth rates in per capita income in emerging markets become faster than growth rates in per capita income in the developed countries.

Trade became a much bigger part of the world economy. Around 1990, it took off and rose to a point where it's now about 30 percent of the world gross domestic product (GDP). That is the era that we are living in now. This has had an extraordinary impact on national income, per capital incomes, poverty—all those indicators.



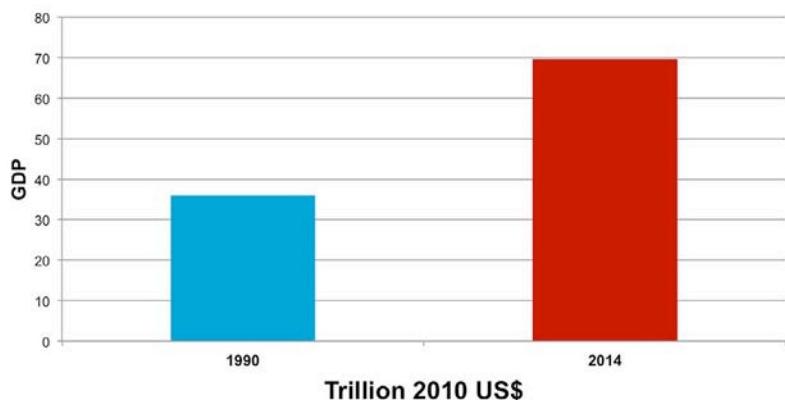
Circle indicates world trade's share of global GDP when it began growing in the 1990s.

Secretary Mabus spoke about the possibilities. This is the realization of possibilities: a doubling in global GDP between 1990 and 2014. Think what it has meant for each of your countries to have that.

Global trade has been the engine of that economic growth. Never have so many people been lifted out of poverty. We're not talking about hundreds of millions. We're talking about billions of people being lifted out of poverty.

This comes with a degree of interdependence that I think people don't really understand. There is discussion today about the relationship and rivalries between

World Economy Doubled since 1990



Source: IHS Economics

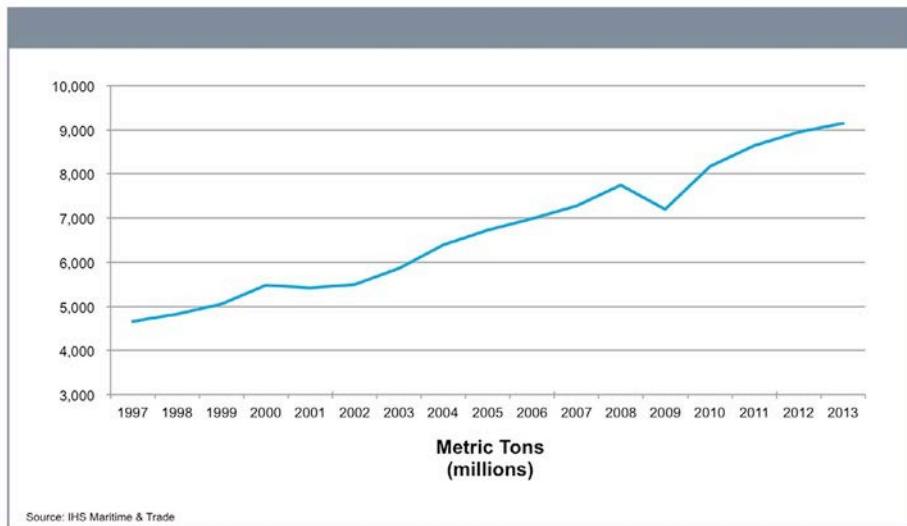
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Chart showing the doubling of world GDP since 1990

the two largest economies in the world, the United States and China. But if you look at the degree of interdependence, you see how connected these two countries are. I use this just as a case study. Today, there are three hundred thousand students from the People's Republic of China studying in the United States. Trade between the two countries is U.S.\$600 billion. These two countries are very connected. It's these kind of connections that we have to keep in mind at the same time that people focus on strains and tensions.

Three years ago at this conference, Steve Carmel gave a very good speech about supply chains. He made the point that "made in China," "made in the United States," "made in Germany"—these phrases really don't mean much anymore. I went into the IHS databases to look at some of the products that we know. The new iPhone is made in seven countries, if you look where the parts come from. Look at the Boeing 787: twenty-three countries. Look at Airbus 380: twenty-six countries. These supply chains are powerful and interconnected.

Seaborne Trade Volume



Source: IHS Maritime & Trade

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Seaborne trade rising in volume and 75 percent of all trade in 2013

Seaborne trade is the backbone, basis, and foundation of this globalization. About 75 percent of all trade in 2013 was seaborne. This truly demonstrates that the seas are the great highway and wide commons for the world economy and prosperity.

In terms of patrolling and protecting those sea lanes to meet national interests, they ensure an open trading world and continuing success for the global economy. Again, that means economic growth, rising incomes, reduction in poverty.

THE FLOW OF ENERGY SUPPORTING THE GLOBAL ECONOMY

Now, from that general discussion of globalization, I go to a more specific discussion about energy. It is particularly significant to all of you in this room because it's important for your overall economies, for security. And it's important to your budgets because of the cost of fuel.

One major result of this general pattern of globalization is what we might call a new geography of world energy. It's of great significance to the countries around the world and of great importance for the world's sea lanes.

We're looking at a transformation today of world energy and its supply lines that is raising important and unsettling questions about the missions of many of the navies represented in this room.

We've seen in energy over the last ten years two revolutions: one is demand and one is supply.

The first revolution is demand, consumption. As late as 2004, the world operated on the assumption that oil was going to be U.S.\$20 a barrel, forever. Today, it's around U.S.\$100 a barrel. That assumption regarding U.S.\$20 a barrel was overwhelmed by what was happening in the world oil market, the surge in consumption.

People in my line of work talk about oil shocks, and they think about 1973, 1979, the Gulf crisis of 1990. All were disruptions of supply.

Around 2004, we started to see something different. We saw a shock that came not from disruption, not from an interruption of supply, but from consumption. It reflected the globalization of energy demand. It was the result of the success of globalization: rising incomes, economic growth, and emerging markets. Between 2000 and 2013, U.S., European, and Japanese shares of world GDP went down, while the shares of GDP rose for China, India, and countries with emerging markets. The topography of the world economy is shifting with the rise of emerging markets.

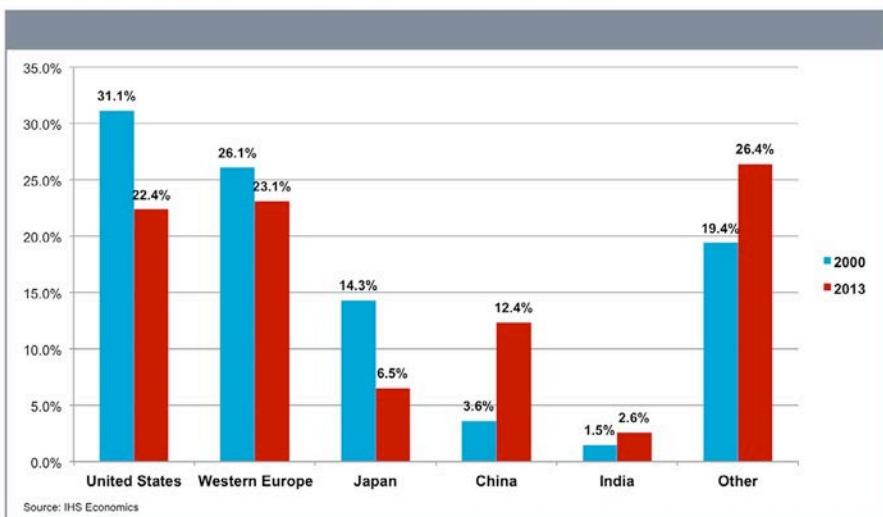
And it is reshaping world energy demand. Today, world oil demand is 20 percent higher than it was at the beginning of this century. But what's really striking is this change in geography. In 1990, Europe and North America used two-and-a-half times as much oil as Asia. In 2000, two-thirds of world energy demand was in traditional industrial countries. Now, half of it is in emerging markets and developing countries; basically, that's where all the growth will be. Our expectation is, by 2040, Asia will use more oil than Europe and North America combined. That is the change now unfolding in the global energy markets.

This surge in demand led to that dramatic increase in the price of oil, which you know from your own budgets and your own fuel bills. It made people today talk about U.S.\$100 a barrel as the new U.S.\$20 a barrel in terms of price.

And it brought countries into the global oil market. China had been self-sufficient in oil. In the 1980s, it exported oil to Japan. Now, it imports 60 percent of its oil. India imports close to 80 percent of its oil. And the Middle East today is not just a supplier of oil but also a major consumer.

When you get rising prices and fear of shortages, you also get a fear that the world is running out of oil. You get peak oil and fear of peak oil. It's true, the world has been

Shift in World GDP: 2000–2013



Asia and emerging market countries' shares of world GDP increase

running out of oil. Five or six years ago, it was the fifth time that the world was running out of oil. The world started running out of oil in the 1880s, in the first crisis.

If not for innovation on the supply side, today we would be looking probably at another oil crisis. We would be in a world without economic recovery, because the supply picture appeared too tight. Each time it looks like we're going to run out of oil, new technologies and new areas open up; that's exactly what's happened this time. Around 2008, we started to see the unconventional revolution in oil, natural gas, shale gas, and tight oil, brought about by two technologies: hydraulic fracturing and horizontal drilling.

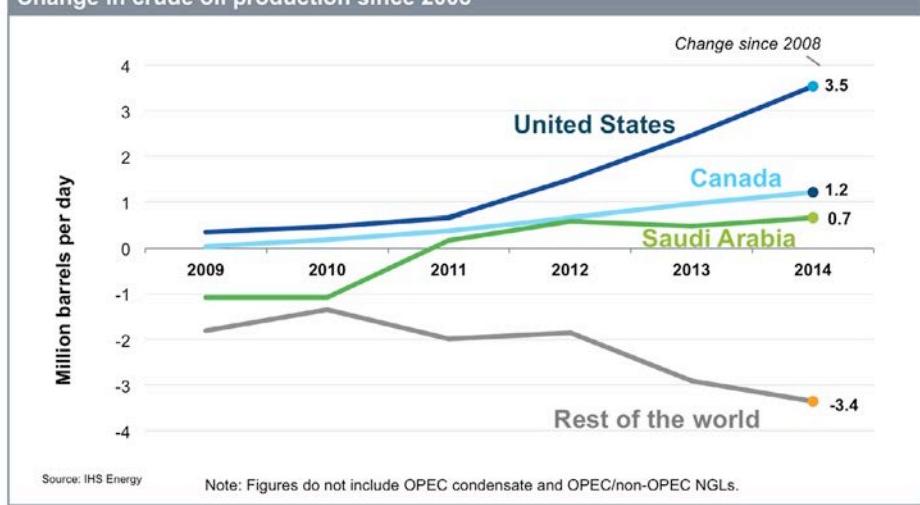
The real effects have only become apparent in the last couple of years. The United States is thought to have one hundred years of supply of natural gas. The United States will be joining Australia and Qatar as one of three major exporters of liquid natural gas (LNG) by the beginning of this next decade.

You've had this very dramatic increase in U.S. oil production. There has been a disproportionate growth in oil production in the United States to the surprise of almost everybody in the United States. The International Energy Agency now predicts that the United States will overtake Saudi Arabia and Russia as the world's largest oil producer, something that no one would have believed possible five years ago. But it's owed to technology.

Since 2008 US Oil Output up 3.5 Million bd



Change in crude oil production since 2008



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Dramatic increase in U.S. oil production, changing competitiveness in world economy

This very dramatic increase in U.S. oil production has had a big economic impact in terms of being a stimulus to economic growth. It's changing the competitiveness in the world economy. The German economics minister recently warned that Germany faces a dramatic deindustrialization because high costs are making it hard to compete.

There's a question in many minds: Is this revolution in the United States going to go global? The answer is that this capacity does exist and the geology is there in many other countries. But the question is what happens aboveground in terms of policies.

Then there's the very interesting and important question: What does this mean in terms of international relations? It's something that people are struggling with and thinking about. What changes and doesn't change? One thing we can say is that sanctions on Iran would not have worked had it not been for the increase in U.S. oil production.

Take what's happening in the United States, with the Canadian oil sands, offshore Brazil, with the potential of the energy reforms in Mexico. We see a redefining of the supply lines with world oil, and changes in flows. Instead of flow going from the Eastern to Western Hemisphere, which, it seemed, was growing more and more, we will have a kind of north-south, and south-north flow in the Western Hemisphere. Also, more oil from Africa and the Middle East will flow to meet growing demand in Asia.

Large Crude Oil Carriers Transiting the Strait of Malacca and the South China Sea on 5 August 2014



© 2014 IHS

Source: IHS Maritime & Trade

IHS tracking shows tankers (dots), and the “oil bridge” to East Asia

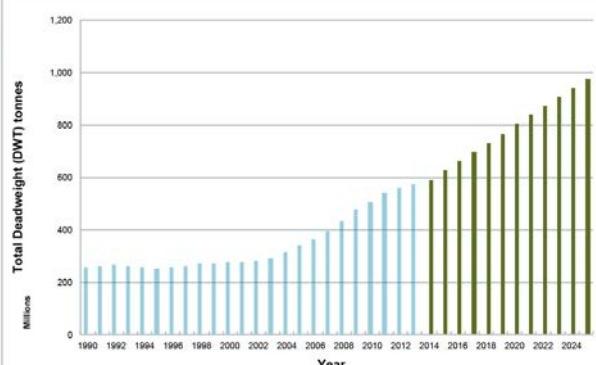
Over the next two decades, we expect world energy demand to increase by 35 to 40 percent, despite strong support for renewables. Probably, oil, gas, and coal will still be providing 75 percent of world energy, which means that the world will depend on massive shipments of petroleum, natural gas, and coal. Almost all of that growth will be seaborne, and not only in oil. With the increasing importance of natural gas, increasingly large volumes of LNG will move on the seas. We'll see a very sharp growth in tanker capacity.

Total Tanker Capacity 1990–2025



- Almost tripled since 2002

- 40% increase by 2025



Source: IHS Maritime Ship Capacity Forecast

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A 40 percent increase in tanker capacity is projected over the next eleven years.

ENERGY SECURITY IN AN ENERGY-DEPENDENT GLOBAL ECONOMY

A major disruption of those flows would lead to regional or global economic crises. The kind of threats that Secretary Mabus and Admiral Greenert pointed to—piracy, terrorism, war—will be very important, as you consider these flows. It points to the central role of navies and the collaborative requirement to help ensure energy security.

That's the third topic I want to turn to, energy security, and how to think about it in a modern, energy-dependent global economy. The standard definition of energy security is pretty familiar: availability of sufficient supplies at affordable prices. But, in the twenty-first century, we need to think about it in multiple dimensions.

First is physical security: protecting assets, infrastructure, supply chains, and, critically, sea lanes and trade routes. The following graphic is a snapshot of tanker traffic around the world on 10 September 2014. That is a lot of oil movement that needs to be protected. Five, ten years from now, that graphic is going to have more dots on it, reflecting more sea traffic. One of the critical roles for the world's navies will be protecting them.

There are two new dimensions to this physical security. One on everybody's mind is cybersecurity, and the vulnerability of energy systems to cyber disruption. After the company's website was attacked, costing it hundreds of millions of dollars, the former CEO of Sony said, "We don't live in a brave new world. We live in a bad new world of cyber vulnerability." That's very much on the minds of those in the energy industries around the world.

The other, and already alluded to, is the emergence of what I call "integrated energy shocks."

Location of All Crude Oil Carriers over 55000 DWT on 10 September 2014 – IHS Tracking



Source: IHS Maritime & Trade
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In five to ten years, a lot “more dots” will need protection.

Think about the tsunami in Southeast Asia, Hurricanes Rita and Katrina in 2005 on the U.S. Gulf Coast, Fukushima in Japan in 2011, and Superstorm Sandy in the Mid-Atlantic states in 2012.

You have something that knocks out everything at the same time: oil, natural gas, electric power. You have the interdependence of these systems, the paralysis of emergency systems. I think this is going to be one of the themes of the panel that follows, being prepared and able to cope with a regional disruption. Navies have a crucial role, as Secretary Mabus put it—the presence to be there to help deal with these. This is something that will be on the agenda. We know that there will be future shocks.

Another dimension of energy security is access to energy. That means the ability to develop and acquire energy supplies physically, contractually, and commercially. It's not something that happens overnight. It can take ten, fifteen years to bring a major, new oil field on. So a reduction of barriers to trade and investment is very important in terms of ensuring energy security.

The fourth dimension, which resonates with the theme of this conference, is that energy security is a system, a regime, collaboration among nations. It takes us back to Sandford Fleming and the international collaboration necessary to create time zones and standard times. Energy security requires national policies and international institutions that can respond, in a coordinated way, to disruptions, dislocations, and emergencies, as well as help maintain the steady flow of supplies and help ensure you don't have disruptions.

There are a lot of challenges for governments. One I see as a student of the global energy industry is the need for governments to avoid the temptation of focusing on short-term gains rather than long-term cost of investment. Recognize that these

industries move in cycles of investment and there is a competitive global market for investment.

OBSERVATIONS

Let me just make some observations about energy security. Winston Churchill converted the Royal Navy from coal to oil on the eve of the First World War in order to gain speed and maneuverability. In Parliament, people shouted at him, “What about the dangers of dependence on one country, Persia, Iran?” Churchill’s reply was that safety in oil lies in variety, and variety alone—in other words, diversification.

That’s a fundamental maxim of energy security that holds true today. Diversification of supply is one of the main guarantors of energy security. Indeed, it is the starting point. For producers, diversification of demand is equally important.

Second, there is only one oil market. People say, “United States—we’re not going to be part of the global oil market.” Some from other countries might say the same. There is only one global oil market. You have a disruption anywhere and it becomes a disruption everywhere. You may be better off because you’re producing more, because you have more supplies coming into the market. But there’s only one market.

Another point, and this is sometimes hard to remember: markets, themselves, are a very effective way to deal with disruptions. Large, flexible, well-functioning markets contribute to security by absorbing shocks, and allowing supply and demand to recover and respond more quickly. We’ve seen that again and again. The ingenuity of the market is one of the assets of energy security.

Another key observation, central to why you all are here: it is important to build cooperative relations based on common interests with nations, producing, exporting, and consuming energy. And that’s true between producers and consumers, including those in the emerging markets, the new globalizing countries. We need a system for the twenty-first century, similar to the International Energy Agency system set up in the 1970s. We need a system to bring countries together, so they understand each other’s position and reduce suspicion and tension that can mount during times of crisis.

One other thing to keep in mind about energy security, and it’s probably basic to what you do every day, in your training, preparation, what you focus on. Energy security is a matter of mind-set, thinking and working on the assumption that there will be disruptions and threats to energy security. Plan that they will occur and know what to do. I’m sure that’s on the agenda of everyone in this room.

CONCLUSION

Energy security is critical to the success of a globalized world and the well-being of nation-states. Energy security, though, becomes more complicated because of economic growth, the scale and requirements of energy supply and demand, and just the pace of what happens. Navies have a central role in that security.

The global economy doubled in twenty-five years. In the next twenty-five years, it could double again. We could get back on a growth track. Think of all that would mean, in a positive way, for the peoples of your countries and their ability to have a better life.

Globalization will continue. It's not a question, do we turn it on or off. There are too many different things at work. Computers aren't going to get slower. The issue is that as we see the benefits, we also see new risks that appear as a result of them. The question is not whether globalization will or will not occur; rather, the question is what kind of globalization. Is it one that will benefit the peoples of the world, or one riddled by conflict and risk?

The answer will be determined, partly, by how nations see their interests. It will be determined by the degree of collaboration and cooperation of countries to meet and solve problems, the existing ones as well as the new ones that will emerge.

Admiral Mahan was a man of his time, of that first age of globalization. So was Sandford Fleming. In the late nineteenth century, Sandford Fleming saw and met the challenge of time in that first age of globalization through international cooperation that established time zones, bringing order to global commerce and travel.

Look back to that spirit of Sandford Fleming. The international collaboration he invoked can, in the twenty-first century, help meet many challenges of the second age of globalization. By so doing, it can help ensure its benefits to the people of all our countries and contribute to the security of all nations represented here today.

DISCUSSION

Rear Admiral Makbul Hossain, Bangladesh:

I'm the Director of Bangladesh Coast Guard. My heartfelt thanks and gratitude to Dr. Yergin for an excellent presentation.

You covered in depth energy security and touched on cybersecurity. The world has become dependent on the [cyber] technology in the twenty-first century. Whether in the [energy] production industry or ship operation, we are dependent on the electronics. If there is a cyber attack, it puts the whole industry and marine institutions in trouble.

In the last couple of years, the United States established a cyber command. How best can developed countries help others, who have less access to cybersecurity, and provide opportunity for all countries to have cybersecurity?

Dr. Daniel Yergin:

That's an extremely important question. Sometimes we don't realize the degree of vulnerability, how much more interconnected we are. Perhaps that's a theme here.

Admiral Jonathan Greenert, United States:

We should make it an agenda [item]. Somebody lay out the current cyber situation and have the conversation.

We need to baseline it, and I would suggest, as a group, take this as an item that we collectively decide to take on at the next regional [symposia]; or we, later, have somebody talk authoritatively, set the baseline, and have the conversation. It's inevitable, in my view, that we have that conversation. Thanks for bringing it up.

Dr. Daniel Yergin:

Even the advanced countries are trying to catch up with understanding the nature of the threats, because it is moving so fast. Admiral Greenert has set a very important agenda item. Thank you, indeed, for the question.

Rear Admiral Frank Trojahn, Denmark:

I'm head of the Royal Danish Navy. Thank you for an excellent lecture. Regarding future trends in maritime security, why didn't you mention the Arctic region? Maybe you could share your thoughts, or the thoughts of the IHS, about the Arctic region as part of future trends in maritime security.

Dr. Daniel Yergin:

Particular countries that are members of the Arctic Council will know the Arctic becomes a path of transit. Certainly, from an energy point of view, there's great interest in it.

It's thought that as much as 20 percent of the world's hydrocarbons, oil and gas, are to be found there. We are in a period that goes back to Sandford Fleming, working out the rules for the Arctic and the cooperation.

I guess what we're doing is assembling the agenda items for the next session in two years. We have cyber. I think we've just added the Arctic. So, thank you. Your point is very well taken.

Captain Digby Thomson, South Africa:

How does illegal [oil] bunkering at sea affect the global energy market?

Dr. Daniel Yergin:

This is a big, multibillion-dollar problem. It involves criminal activity. It also potentially [includes], or does involve, funding of terrorist activities.

Secretary Mabus talked about the dialogue that occurred with African countries trying to address it. It really takes a great deal of coordination. We've tried to understand the scale of it, and obviously there's much that's very shadowy that occurs as part of it.

It requires attitude and engagement on the part of governments that want to deal with it. We've thought about it in terms of the Gulf of Guinea. You can look at it in terms of how ISIS is said to be funding itself with U.S.\$1 million a day in stolen oil.

This is an agenda [item]. It's obviously one of the areas, when you talk about collaboration, that's so important, whether it's off East Africa or the Gulf of Guinea. The scale of it—I don't remember the number—but we looked at it for one country in Africa, and the number went into many billions of dollars that were going into the wrong pockets.

Admiral Jonathan Greenert, United States:

You mentioned the oil market as if it was an entity, a collaborative entity, maybe loosely gathered together. First of all, is it feasible that there is such a thing? Does it describe itself as a group of companies?

Second, with the huge demand that you've laid out, is it feasible that [this entity] could be coerced? Or could it start to get organized, include in its concepts its own

security such that, if it were threatened, or those transits and maritime crossroads were threatened, [it could] provide its own security?

For example, if the Strait of Hormuz or Suez Canal were to be closed, could those responsible be regulated or disciplined in some manner by this entity? Could it protect itself economically, using economic tools, if you will?

Dr. Daniel Yergin:

I think of this giant oil market—ninety million barrels a day—as all sorts of participants, from producing countries to refiners, to distributors, to traders. Oil has become not only a physical commodity; it's actually a financial commodity, as well. It is one big giant market.

Could it be manipulated or controlled by certain actors? We know that some players can have a big impact. The price goes down if Saudi Arabia increases its production. Let's say you lose Libya. Saudi Arabia increases its production; that helps balance the market. Obviously, the increase in U.S. production has impact.

There are certain choke points. The most famous is the Strait of Hormuz, where a disruption there could, even if only temporary, send panics through the world economy and send the price shooting up and leaving us in a very difficult situation.

Almost every major recession since the early 1970s has been preceded by a big spike in oil prices. That risk is very important that you point to.

Producing countries depend on the flow of revenues through those markets. If you lost confidence in the ability of all those tankers to move fairly smoothly through the world economy, it would be a big security and economic threat.

The oil market doesn't have a single mind.

Admiral Jonathan Greenert, United States:

That was my point. It doesn't have a hierarchy that can help control or, if you will, regulate it from the perspective of security.

Dr. Daniel Yergin:

In this book that will be out, I talk about one very important development. When oil burst on the scene in the 1970s as this big security issue, it was seen as a confrontation between oil producers and consumers. It started a process in which producers and consumers—not all, but many—decided they had common interests.

You see the International Energy Agency talking with OPEC [Organization of Petroleum Exporting Countries] countries, and having that kind of dialogue, that kind of exchange of information. I've had the opportunity to see it up close, on both sides, first, to figure out what's happening, how big is the disruption, and what we can do in terms of managing supply and getting good information. Very important to have good information. Very important to have good information in the marketplace to calm it down.

At the level of nation-states and international organizations, there is the kind of collaboration that you're talking about from a naval point of view happening in the oil market. It helps bring greater stability, so that we don't have, or we can avoid, a serious crisis. That is something that has come out of learning and experience, and that is in the interests of all parties.

Some countries don't participate in it. Some countries want disruption. But the countries that are major exporters have the same common interest. We've seen the common interests among consumers becoming clearer. Everybody has a stake in a well-functioning global economy. It takes active participation by governments to help manage the kind of situations you're describing.

Professor Yuri Gramajo, Uruguay:

Thank you very much for your lecture. I read one of your books. You talked at length about the globalization process. When we talk about globalization, we find a sea of contradictions. On one hand, we tend to think of our world as a tighter and closer place; on the other hand, we see the world is more and more divided. There are more countries [with regions] claiming independence within their own countries.

Admiral Greenert and Rear Admiral Gardner talked about the evolution of this symposium and the number of participants that attended, and that speaks to a reality of a very complex world.

My country, Uruguay, is slowly joining the group of oil-producing countries. You just mentioned some of the challenges. What are the challenges that new, small countries with less naval power face when trying to join this club?

You say that we need to try to avoid short-term gains. Could you expand on this as well?

Dr. Daniel Yergin:

Many good points, beginning with the sea of contradictions. As you get a world that's tighter and more interconnected, you also get new vulnerabilities. We saw that happen in the financial crisis.

I was also thinking in terms of the number of actors. When Sandford Fleming had his time conference and Admiral Mahan was writing, there were about thirty countries in the world. Today, there are about two hundred. It certainly has become a more complicated picture.

On your specific question of being an oil producer, I think the first challenge there is to manage expectations. People start thinking that the energy resource is an ATM; you just put in a card and you take money out. And people and the public expect things to happen very quickly.

Second, manage what some call the resource curse. Make sure that the movement of money into the economy doesn't destabilize it.

Third, understand that investment is a long-term proposition, not a short-term proposition; that's what the country wants, the long-term benefit. It means being realistic and competitive.

And your point about physical security of supply—that, in a way, goes to the bunkering question within the country. That's a kind of question for the nation-state. Then there is the security of supply as it leaves the country, as well as the flow to other countries. It gets very much to the central focus of this conference, about the collaboration among navies to protect the security of the sea lanes.

Your question had many dimensions. My answer had many dimensions, as well.

It is very meaningful to come here and share these thoughts. You have the opportunity to spend this week thinking about these important questions. I'm glad to have been able to join you. Thank you very much.



Panel Discussion One

Future Trends and Maritime Security

Moderated by
Admiral Dr. Marsetio, Indonesia

Panel Members:
Admiral Katsutoshi Kawano, Japan

Admiral Wu Shengli, China

Admiral Mohammad Asif Sandila, Pakistan
Rear Admiral Cheikh Bara Cissoko, Senegal

Professor Thomas Mangold:

This panel will address future trends in maritime security. It's a great follow-up for Dr. Yergin's address. Leading the panel is moderator Admiral Dr. Marsetio, Chief of the Indonesian Navy. The admiral is a first-class scholar, earning the highest accolades in his professional military education, at home and abroad. He recently received his doctoral degree cum laude in cultural studies from Gadjah Mada University.

At sea, he served in a variety of positions on different classes of Indonesian warships and commanded the Military Command and Western Fleet. Ashore, he held strategic positions throughout the navy staff, including vice chief, before he was promoted to chief, almost two years ago. We are thrilled to have someone with his extensive experience and sharp intellect to run the panel.

He is joined by Admiral Kawano, the Chief of the Maritime Staff, Japan Maritime Self-Defense Force (JMSDF); Admiral Wu Shengli, Commander, People's Liberation Army Navy; Admiral [Mohammad] Asif Sandila, Chief of the Naval Staff, Pakistan; and Admiral Cissoko, Chief of the Naval Staff, the Senegalese Navy.

Admiral Dr. Marsetio, Indonesia:

First, I welcome you to this panel. Also, I express my sincere gratitude to Admiral Greenert for giving me an opportunity to be a moderator.

The theme of the twenty-first symposium is "Global Solutions to Common Maritime Challenges." The purpose of the symposium is to create solutions within a global network of maritime nations. We seek to voluntarily harness the power of the international community, in ways that are in the interests of individual nations, in order to effectively and efficiently confront common challenges.

We have four speakers on this panel sharing their ideas and helping find solutions in areas of common interests. This includes new visions of maritime security, maritime security levels, addressing the evolving face of piracy, humanitarian assistance, and future trends in maritime security.

The first speaker is Admiral Katsutoshi Kawano, thirty-first Chief of Staff of Japan Maritime Self-Defense Force. Admiral Kawano is a native of Osaka and a surface

warfare officer. He has served in various levels of command and on the Maritime Staff in the plans and programs division. At sea, he was recently in command of the fleet. Admiral Kawano is also a graduate of the Naval War College. He was born in November 1954 and raised in Kanagawa Prefecture.

The second speaker is Admiral Wu Shengli, Commander of People's Liberation Army Navy and a surface warfare officer. At sea, Admiral Wu commanded a destroyer and a destroyer flotilla, and has served as commander of the South Sea Fleet. Also, Admiral Wu has served as a commander of the Dalian Naval Academy, and most recently, as deputy chief of the General Staff of the People's Liberation Army.

The third speaker is Admiral Mohammad Asif Sandila. He joined the Pakistan Navy in 1972. He has commanded ashore and afloat, including Pakistan Navy Ship *Badr* (F-184), Pakistan Naval Fleet, and Pakistan Maritime Security. He holds degrees from the Naval Command and Staff College in Indonesia and National Defence College in Islamabad. Admiral Sandila was appointed as Chief of Naval Staff of the Pakistan Navy in October 2011.

The fourth speaker, Admiral Cheikh Bara Cissoko, has commanded the Senegalese Navy Staff since 2012, and is a surface warfare officer. He has commanded several fast and ocean-going patrol craft, including *Poponquine* and *Podor*. He has served as a United Nations observer and aide-de-camp to the president of Senegal. He is a graduate of the Staff Officer's Course in Morocco and the Naval Postgraduate School in Monterey, California, United States.

I welcome these speakers. First, will be Admiral Kawano presenting "The Future of Humanitarian Assistance and Disaster Relief."

Admiral Katsutoshi Kawano, Japan:

It is a distinct honor for me to present on the future of humanitarian assistance and disaster relief (HA/DR) in maritime security.

BLESSINGS OF THE SEA

As an introductory remark, I would like to speak about the blessings of the sea. Since ancient times, humans have always received wares from the ocean. Why is it that we depend on the sea for transportation and trade? The sea is suitable for mass and long-distance transportation.

Maritime transport continues to increase. Last year, the amount of world maritime trade reached 9.9 billion tons, which is three times as much as thirty years ago. In today's world, maritime transportation is indispensable for our well-being.

At the same time, the sea provides us fishing and is an important food resource. Moreover, besides ocean-bottom resources, such as offshore oil and natural gases, wave and tidal power generation make the sea a potential energy resource.

The sea is the foundation of world peace and prosperity. It is also a global commons from which all of us benefit. In order to keep the sea as a global commons, the following two conditions must be ensured: one is the freedom and safety of navigation and overflight, another is maintenance of maritime order based on the rule of law and peaceful settlement of disputes in accordance with relevant international laws.

Each navy conducts operations in peacetime to secure these two conditions. Such operations include intelligence, surveillance, and reconnaissance (ISR); maritime

law enforcement; counterpiracy; and maritime interdiction operations. These and other operations are part of securing safety and rule of law on the ocean.

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF IN MARITIME SECURITY

Moreover, multinational exercises provide opportunity to establish common rules and standards among navies. We see humanitarian assistance and disaster relief as such operations that navies can carry out in peacetime to contribute to maritime security. How, exactly, do they contribute to maritime security? The key is seen in the characteristics of recent HA/DR operations, which involved the activities of the JMSDF.

The Sumatra earthquake and tsunami disaster in 2004 caused serious damage, especially in the coastal area, and left three hundred thousand dead or missing. It is said that about thirty thousand personnel from thirty-five countries were dispatched to engage in relief activities.

When Typhoon Haiyan hit the Philippines last year, many countries, including Australia, Canada, China, Japan, the United Kingdom, and the United States, dispatched military assets. This multinational operation was led to success by a coordination center, organized under the Philippines Joint Task Force.

Last March, Australia, China, Japan, Malaysia, New Zealand, the Republic of Korea, and the United States gathered with military aircraft to carry out an air search for the missing Malaysia Airline Flight MH370.

What we learned from these activities is that damage can be quite extensive, especially in coastal areas. And as more roles are given to the military, more countries participate in HA/DR.

Recent HA/DR operations illustrate three ways in which they are significant for maritime security.

My first point is derived from the fact that damage can be quite massive. Generally, the disaster-affected country's police force will have its hands full with rescue



Japan Maritime Self-Defense Force in disaster relief after Typhoon Haiyan in the Philippines

operations. Moreover, the police themselves may also suffer damage. This can affect the country's policing capability, resulting in an increase in crimes and terrorism that can put the stability of the coastal areas in jeopardy.

Prompt cooperation among nations in support of the disaster-hit country can help its police force quickly restore its capability. Then, the police force can resume its primary work, which is to maintain order and stability in the coastal areas. In this sense, HA/DR operations are a factor in ensuring freedom of navigation, maintaining maritime order, and upholding the rule of law.

I mentioned that more countries are sending their militaries for HA/DR operations in recent years. That means we need to be constantly communicating with each other through multinational exercises and cooperation.

Such communication allows us to share our experience and knowledge and establish procedures regarding command, control, and communications, and enables us to develop HA/DR capabilities. This capability can also be used for other peace-time naval operations. This is a second benefit of HA/DR in maritime security.

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF OPERATIONS ENABLING COOPERATION

The fact that more countries are taking part in humanitarian assistance and disaster relief brings us another benefit. The objectives of humanitarian assistance and disaster relief operations can be easily shared among countries. This lays the groundwork for cooperation and establishes common rules and standards such as standard operating procedures.

For example, at the ASEAN [Association of Southeast Asian Nations] [Defence Ministers Meeting](#) (termed "ADMM-Plus")—a multinational defense ministers' meeting in the Asian region—Japan and Laos, as co-chairs, have taken the lead in setting standard operating procedures for humanitarian assistance and disaster relief in the region. We expect our establishment of common rules and standards in this field to lead to a similar effort in more complex fields beyond humanitarian assistance and disaster relief.

As one of the effects of humanitarian assistance and disaster relief in maritime security, the JMSDF proactively takes part in multilateral exercises. [PACIFIC PARTNERSHIP](#) is one of them. We dispatch ships to provide medical care and engage in cultural exchange with other participating navies and cross-coordinate with the United States and Australia.

This year, Japan Ship *Kunisaki*, carrying a multinational crew from the United States, Australia, and Japan, provided medical care and transported relief supplies from the United States in the typhoon-hit areas of the Philippines. JS *Kunisaki* also conducted emergency patient transport training in Vietnam and restored hospitals in Cambodia.

These activities are what I discussed. They assist a country in maintaining safety and order, and they allow the navy to develop its capabilities.

In U.S. Navy-led RIM OF THE PACIFIC EXERCISE (RIMPAC) 2014, the commander of the participating JMSDF fleet served as vice commander of the combined task force and as a commander in the HA/DR training with a simulated hurricane

scenario. This year was the first time China and Brunei participated in RIMPAC, the twenty-fourth in the series that began in 1971.

During the exercise, multinational meetings were held among naval staffs. This mutual understanding leads to development of naval capabilities, establishment of regional common goals, and standards in the future.

All the activities that I referred to are tools embodying the principle of proactive contribution to peace, which was introduced in [Japan's first National Security Strategy](#). That means that JMSDF activity is one of the efforts by the Japanese government to contribute even more proactively to the security environment of the Asia-Pacific region and globe.

The Japan Maritime Self-Defense Force will continue its effort in humanitarian assistance and disaster relief, and close cooperation with the U.S. Navy and other navies for a better maritime security environment.

I look forward to our journey together for a more open, stable ocean for all of us. Thank you very much.

Admiral Dr. Marsetio, Indonesia:

Thank you, Admiral Kawano. The next speaker is Admiral Wu Shengli, presenting "Developing a New Concept of Maritime Security and Building a Maritime Environment of Peaceful Development."

Admiral Wu Shengli, China:

I'm very happy to participate in this International Seapower Symposium. As the maritime security forum with the broadest scope of coverage, the most participants, and most representativeness, the International Seapower Symposium is an opportunity for each navy to increase mutual trust, reach consensus, and deepen cooperation. It also is a forum for navy leaders to create friendships, exchange ideas, and share experience. This meeting has an important role and long-term effect on maintaining maritime security and promoting common development.

First, I would like to thank Mr. Mabus, Admiral Greenert, and Admiral Howe for the invitation.

I think, at the current time, the maritime security situations are currently stable in general. Meanwhile, traditional and nontraditional security threats still exist. Problems left over by history and conflicts of interest in the present are interwoven. Issues of maritime security are increasingly diversified, complicated, and comprehensive, and they're more and more salient.

NEW MARITIME SECURITY CONCEPT CENTERED ON FOUR CS

Faced with new situations, circumstances, and features, we should develop a new maritime security concept, centered on common security, comprehensive security, cooperative security, and continuous security (the 4Cs). We should open a path of maritime security that conforms to the development requirements of the era, and accords with the common interests of each country.

Common Security. The new maritime security concept that we're talking about is that everybody maintains security and enjoys security. In the current world, we're all interconnected, especially in the maritime realm. For example, if a merchant vessel

is hijacked by pirates in the Gulf of Aden, the shipowner, the cargo owner, and the crew may all be from different countries.

To address maritime security issues, no country should pursue self-improvement alone, nor should [countries] seek just selfish gains. Instead, all countries, in accordance with the concept of common security, should pull together and help each other in times of trouble. Every country shares the responsibility of safeguarding maritime security and enjoys the well-being brought by it.

Comprehensive Security. What we talk about in comprehensive security means giving overall consideration to security issues in all areas, featuring integrity, diversity, and co-movement. Maritime security issues today have gone beyond the traditional domain, covering a variety of areas, including military security, resource security, passage security, and environmental security. To address maritime security issues, we should not just take a piecemeal approach, treating the symptoms but not the disease, nor should we have no sense of priority. We should, rather, expand our strategic vision, make all-rounded, multiangled arrangements, and treat both the symptoms and the causes to effectively cope with various maritime security risks and challenges.

Cooperative Security. “Cooperative security” means seeking security through pragmatic cooperation. There’s a [proverb] in Chinese that says, “One thread is easy to break, but one thousand threads are able to pull a boat.” To address maritime security issues, one should not merely rely on one’s own power, which is impossible and impractical. Instead, we should pursue peace, strength, and security through cooperation.

We ought to continuously expand the scope of our cooperation through new and innovative ways to jointly safeguard maritime security and try to achieve mutual benefit and a win-win situation.

Continuous Security. “Continuous security” means paying equal attention to security and development. History has proved that no security [means] no sustainable development, and vice versa. To address maritime security issues, we need to work together to avoid security risks and keep hot issues from getting out of control. We should avert conflicts by sharing interests, and share interests by common development so as to achieve good interaction between security and development. There is a positive interaction between security and development.

The 4Cs are complementary, each with a different emphasis on security issues. Featuring peace and development, they conform to the tide of the day and express common interests of countries around the world. The 4Cs should serve as our common value and the kind of concept to fulfill our commitments.

FOUR MEASURES FOR BUILDING A MARITIME ENVIRONMENT OF PEACE AND DEVELOPMENT

Ladies, gentlemen, and friends, a navy is the main force to maintain maritime security. I do hope with the new maritime security concept and positive and pragmatic measures we could allay suspicion through communication, and eliminate confrontation through cooperation, in order to build a maritime environment of peace and development. To this end, I propose the following four measures.

Facilitate Multidimensional and Multileveled Communications. Good relationships between countries are based on sincere friendships of the people. Sincere friendships rest with heart-to-heart communications. The secret to heart-to-heart communication is frequent communication.

The commander of the People's Liberation Army (PLA) Naval Task Force returning from RIMPAC 2014 told me that [the force] shared professional skills with [its] counterparts from other navies and benefited greatly. We should extend this kind of direct and deep exchange to more fields and levels.

[The first way to achieve this] is to have more frequent high-level communications. Frequent high-level visits and exchanges should be [arranged] to enhance mutual trust and reduce suspicion with the aid of platforms like the International Seapower Symposium, the [Western Pacific Naval Symposium](#), the [Indian Ocean Naval Symposium](#), and other means, like high-level visits and hotlines.

The second way is to expand professional relationships. Besides deepening the existing exchanges, such as maritime search and rescue, diving, and countermine, we should expand them to fields such as counterterrorism, peacekeeping at sea, humanitarian evacuation, and maritime environment surveys to improve our ability to address maritime security threats together.

The third is to promote exchanges between and among naval academies. Such exchanges should be expanded and deepened by establishing regular exchanges of cadets, sending a large number of cadets abroad to study with foreign naval cadets, exchanging instructors to give lectures, and exchanging scholars for academic discussion.

Deepen Open and Pragmatic Maritime Cooperation. Recent years have witnessed remarkable results through close cooperation between different navies in joint exercises and drills, escort operations in the Gulf of Aden, disaster relief and humanitarian assistance, and search and rescue operations for Malaysia Airlines MH370. We should keep the momentum and further promote international maritime cooperation at a new stage.

First, [we can] expand multilateral joint military exercises. The PLA Navy was engaged in a number of subjects in RIMPAC 2014 this July for the first time at the invitation of the United States and is willing to be an active player in the future. I do hope multilateral exercises are supposed to be organized with a more open mind. They should be more integrated, inclusive, and diversified, so as to realize full participation, mutual benefit, and overall benefits.

Second, [we can] strengthen counterpiracy cooperation. We should summarize and spread the valuable experience of cooperation on escort missions in the Gulf of Aden and pay close attention to newly emerging characteristics of pirate activities in order to strengthen cooperation and jointly maintain safe traffic at sea.

Third, [we can] encourage disaster relief and humanitarian assistance cooperation. Faced with problems such as poor information sharing and insufficient operational coordination in the multinational joint maritime rescue operations in recent years, we should explore [new] ways of force access, information exchange, and command and coordination in international assistance operations to further improve joint operation capabilities.

Standardize Maritime Security Conduct Effectively. An inclusive and open ocean asks for more rules and orders.

The Code for Unplanned Encounters at Sea, approved in April of this year at the Western Pacific Naval Symposium, is an important document which standardizes maritime security conduct. As the host country, China and its PLA Navy played a proactive role in facilitating the approval and will undoubtedly fulfill its commitment. Obtaining approval is the initial step. What is more important is implementation.

First is to put the Code for Unplanned Encounters at Sea into extensive use.

The Chinese Navy has already distributed two regulatory documents. Officers and men are required to study [them] through a systematic and diversified method and task ships to guarantee full implementation. We also notice that although the code is applied by navies, there are still problems, which means we should try to settle them together.

Second is to improve this Code for Unplanned Encounters at Sea. We should make timely amendments to this code with regard to emerging problems. Meanwhile, we encourage navies to make up a specific code, suited to their needs, based on their own conditions and regional characteristics, thus continuously improving the maritime security code in practice.

Cultivate Naval Officers Based on Future Needs. Young officers are the future of a navy, the main force of maintaining maritime security. Leaders of different navies should make joint efforts to train responsible, young officers with international horizons and cooperative spirits.

On one hand, young officers should have more experience and time abroad. In recent years, the Chinese People's Liberation Army Navy successfully invited more than sixty midshipmen from twenty countries to be on board its training ship during its foreign visit. Arrangements were made for nearly one hundred Chinese midshipmen to join onboard training with eighteen other countries. This October, thirty Chinese commanding officers will go to the United States for exchange and learning.

All navies should create more opportunities for young officers to exchange ideas with their foreign counterparts on a regular basis and to enrich their careers in the international arena.

On the other hand, a forum for young officers should be established. We need to create a mechanism for such a forum. We can consider making a concurrent forum when we have [meetings of] our regular forums. They have the ability to enhance friendship via deep exchanges, thus enabling the friendliness between navies and the unique navy culture, glorifying generation after generation, and passing the tradition down.

Finally, I wish the symposium complete success.

Admiral Dr. Marsetio, Indonesia:

Thank you, Admiral Wu Shengli. You are ready for new concepts and a new vision for maritime security.

The third speaker is Admiral Mohammad Asif Sandila, presenting "Future Trends in Maritime Security: Piracy."

Admiral Mohammad Asif Sandila, Pakistan:

Admiral Greenert, heads of navies and coast guards from around the globe, ladies and gentlemen, I thank the organizers for giving me this opportunity to talk to you

on “Future Trends in Maritime Security: Piracy.” I am aware that everyone in this room is well informed on the problem of piracy. I would like to recount some key factors for discussion.

Piracy has existed from the earliest days of maritime trade and was generally considered a thing of the past a few decades ago. There has been a recent resurgence of piracy around the globe. The mechanics adopted by the pirates have undergone changes and transformation, and the adverse effects on the global economy are more pronounced. Why modern piracy hurts us more is due to the globalization of our economies. Likewise, two common enablers for piracy have largely remained unchanged, i.e., the presence of thriving commerce to prey on and a visible absence or lack of security in the nearby littoral.

The impact of piracy has been magnified due to the rise in global maritime trade, which has gone up manyfold since the 1950s. Although piracy off the coast of Somalia has drawn global attention because of economic and psychological impacts, maritime piracy remains a global phenomenon.



Maritime piracy remains a global phenomenon.

Historically, a surge in piracy has drawn regional and international responses to counter the menace. We saw this off Somalia recently and off the Strait of Malacca not very long ago. Thankfully, the menace of piracy has decreased in the last few years. The international community deserves credit for getting together and sustaining efforts in a comprehensive manner. Efforts of the international maritime forces have achieved remarkable success in the context of maritime domain awareness challenges that we all face. I think complete eradication of criminal and violent activities on land, despite all the wherewithal, is not possible, and the vast expanse of the seas remains vulnerable to all kinds of challenges, including piracy. Ideally, we would like ships to fly across oceans with relatively similar freedom to

what aircraft have in airspace, though there have been some questions raised recently about air safety.

I think the maritime environment is likely to be complex and uncertain, at least in the foreseeable future. I have seen the maritime strategic landscape undergo radical transformation over the last four decades I have been in the navy. In the old days, distinction between friend and foe was rather easy. Also, then there was not a plethora of ships and craft on the sea surface like today.

ANALYZING THE PROBLEM

The fundamental problem is the turbulent geostrategic environment, resulting in a number of hot spots like Somalia. Thus, negative fallout permeates into the maritime arena. Unquestionably, piracy originates from political chaos on land. Therefore, lasting solutions require security and peace on land. In order to find an enduring solution, we need to analyze the issue of piracy in major regions affected by this menace—that is, Somalia, West Africa, and, to some extent, the Strait of Malacca.

Analysis demonstrates that piracy and maritime security cannot be understood in isolation from political and socioeconomic situations on land. In affected regions in West Africa, for example, the political environment and organized crime provide a fertile environment for piracy. Per the [International Maritime Organization report](#), nine ships were hijacked in the Gulf of Guinea in the year 2013. Similarly, the collapse of the Somali state preceded the rise of piracy around the Gulf of Aden and off the Horn of Africa. In Somalia, a culture of violence, pervasive low economy, and lack of alternate sources of income turn piracy into a plausible survival strategy. Around the Strait of Malacca, poor economic prospects in the wake of the Asian [financial] crisis of 1997 provided fertile ground for the criminals.

In these regions, piracy became worthwhile business and the weakness of state institutions limited risk of punishment. The same scenario also applies to piracy off Latin America, in general.

PROPOSED POLICY CONSTRUCT

With this analysis and consideration in view, an international approach toward tackling the menace of piracy must focus on the following: ensuring political stability, a robust and aggressive legal framework, cutting off financial trails, regional cooperation, and strict adherence to best management practices.

Ensuring Political Stability. Establishing a functioning rule of law in states in turmoil remains the foremost requirement if piracy is to be effectively tackled. Anything short is unlikely to address the issue in totality. This in no way suggests a reduction in commitment by international maritime forces, which have been instrumental in curbing the menace at sea. Extension of a mandate by various task forces for counterpiracy operations is encouraging.

Robust and Aggressive Legal Framework. As far as capturing of pirates in international waters is concerned, the requisite legal framework is in place. Where we have fallen short is the absence of national legal frameworks for effective prosecution of apprehended pirates. Here the progress has remained slow due to various reasons.

Another associated issue is the employment of armed guards on board merchant ships, which has emerged as an effective way of countering piracy. However, authorization to carry firearms on board merchant ships, as you all know, is not covered by the [International Maritime Organization](#) and International Maritime Bureau's regulations. It remains the decision of the flag state. The question is whether this will be a lasting trend and how nations will deal with the legal complications arising from such arrangements.

Cutting Off Financial Trails. I quote from a very interesting article, "[On the Economics of International Sea Piracy—a Case of History Repeating Itself](#)," in which the authors have researched the financial trail in the capture and release of [MV Victoria](#), and the distribution of the ransom of U.S.\$1.8 million, as shown in the following.¹

Position	Ransom Payment
Officers	
Commander-in-Chief, Financial Backer	\$900,000
Interpreter	\$60,000
Accountant	\$60,000
Supplies Logistics Officer	\$30,000
Attackers	
First to board MV Victoria	\$150,000 (plus Land Cruiser bonus)
Eight Others	\$41,000 each
Cooks	
Head Chef	\$20,000
Sous-Chef	\$9,000
Holders	
20 men	\$12,000 each
Total	\$1,800,000

"On the Economics of International Sea Piracy – A Case of History Repeating Itself"
by Barry Dubner & Ritvik Raturi
Michigan State Int'l Law Review

How U.S.\$1.8 million in ransom for captured MVVictoria was distributed among pirates

The lead pirate got a land cruiser as a bonus, and many far and wide benefited from this ransom. The authors also highlighted that out of U.S.\$238 million paid to Somali pirates in 2010, approximately 40 percent, U.S.\$95 million, went to beneficiaries outside Somalia.

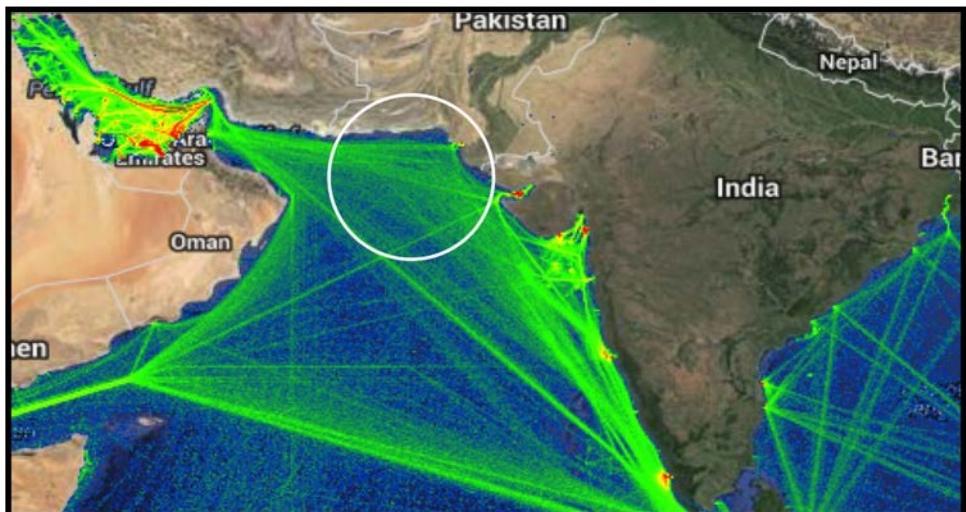
The skeptics of piracy rightly ask, who benefits? Is it the insurance companies? Is it the financiers? Is it the pirates? Is it the middlemen? Is it the security agencies? Certainly, when there is money to be made, there will be unscrupulous elements to exploit the opportunities. Whatever the case, international efforts to cut off the financial trail have not yielded the required and desired results.

1. Barry Hart Dubner and Ritvik Raturi, "On the Economics of International Sea Piracy—a Case of History Repeating Itself," *Michigan State International Law Review*, no. 3 (2012).

Regional Cooperation. In the context of efforts by maritime forces at sea, the long-term solution to piracy lies in regional cooperation. We have seen the success of the Strait of Malacca model; this needs to be replicated off Somalia and, perhaps, in the Gulf of Guinea.

I highlight that the Pakistan Navy has been part of coalition antipiracy efforts in the Gulf of Aden, under [Combined Task Force 151](#). Our officers have commanded this force five times. As a consequence of our navy's employment pattern, Pakistan's exclusive economic zone has remained safe so far. Our counterpiracy vigil has resulted in a shift of international shipping patterns, just south of our coast. You can see a similar trend off the coast of India, where I assume the Indian Navy has made things safer for merchant ships, as well.

The point is that collective efforts are needed by regional nations. Moreover, dealing with nontraditional threats is an inescapable task for navies today.



Pakistan Navy's protection against pirates (indicated by circle) has caused international shipping to move closer to Pakistan's coast.

Strict Adherence to Best Management Practices. The maritime community needs to play an important role in tackling this issue of piracy. This can be done by strict adherence to best management practices, issued by the International Maritime Organization and many other organizations, that can significantly reduce chances of a ship being pirated.

According to an estimate, after adoption of best management practices, the piracy success rate dropped from over 16 percent in 2010–11 to 7 percent in 2012–13. Conversely, the chances of a ship without best management practices being taken by pirates have increased approximately four times.

As long as there is opportunity, piracy will remain one of the challenges to global maritime security. Such a complicated issue necessitates an integrated, all-inclusive approach that can comprehensively address it, including the root causes.

Also, it needs to be emphasized that there is no one solution that fits all practical situations, as dynamics may differ in each situation.

And the most important remedy would be to ensure rule of law around the littorals. We, as naval commanders, need to continue our efforts toward making the maritime environment safer through cooperation and reasonable capacity building.

Admiral Dr. Marsetio, Indonesia:

Thank you, Admiral Asif Sandila, for the presentation. I invite Rear Admiral Cheikh Bara Cissoko to present on maritime security law.

Rear Admiral Cheikh Bara Cissoko, Senegal:

I thank Admiral Jonathan Greenert, Chief of Naval Operations, for inviting me to attend this important forum and particularly for giving me the opportunity to take part in this panel, “Future Trends and Maritime Security.” I’m honored to speak before this august assembly and share my thoughts with you.

My remarks will address, in general, the legal provisions that govern maritime security. I will mainly dwell on the challenges faced by African navies, and particularly by the Senegalese Navy in the fight against illegal, unregulated, and unreported fishing.

In Senegal, as is the case for many other countries, the policy of fishery management falls under the responsibility of the Ministry of Fisheries and Maritime Affairs. The navy is the only service capable of intervention on the high seas and also maintaining command and control of assets at sea. The navy has positioned itself as the main service in charge of the operational aspects of fisheries surveillance at sea.

International conventions and agreements establish a general framework for the intervention of navies in monitoring activity taking place at sea. Likewise, domestic legislation specifies the navy’s mission related to government action at sea and grants specific prerogatives to the navy ships’ commanding officers in maritime law enforcement.

However, law enforcement related to maritime security and those fighting illegal, unregulated, and unreported fishing, are facing several challenges, three of which I highlight here:

- Inadequacy of legal frameworks at national and international levels to efficiently deal with crimes, which are often transnational
- Diversity of actors in charge of the fight against criminality at sea, requiring strong coordination
- Temptation to resort to private means of monitoring and control, making the legal framework for maritime security even more complex.

Inadequacy of the National and International Legal Framework. In West Africa and Senegal, the increasingly intense exploitation of resources of the sea has resulted in a significant reduction in fish stocks. Yet the fisheries sector is vital for our economy. It brings in foreign currencies, generates employment, and supplies protein for nourishing the population. It is, thus, advisable to control it by drafting legal instruments capable of preventing fraudulent exploitation, [which causes] us to lose around U.S.\$500 million each year.

It is emphasized that illegal, unregulated, and unreported fishing, as well as all forms of illicit trafficking at sea, has been extensively modernized. [This] requires an effective response with sophisticated means. However, a legal framework must



Intense exploitation of fishing resources

be established so that infringements detected with new technological means will be legally acceptable.

Vessels caught or detected committing offenses under the law of a coastal state and escaping the jurisdiction of the state having noticed the offense should be prosecuted under the jurisdiction of the port, or the flag state.

Bilateral agreements between neighboring states could greatly improve hot pursuit. The example of the maritime borders between Senegal and Gambia is relevant. Pursued vessels can easily enter the territorial sea of each state and escape arrest.

Likewise, the conditions for granting flag rights by states must take into account the background of vessels and any previous involvement in such activities as illegal, unregulated, and unreported fishing. Thus, there is a need for national transposition of legal instruments to which the states have subscribed, such as dockside inspections, or control by port states, allowing effective legal action that can be initiated in every country.

The legal framework of the artisanal fishing sector is, finally, a major challenge to the agencies in charge of monitoring the fisheries. It must take into account the importance of artisanal fisheries, which constitute the main source of incomes. In Senegal, approximately twenty thousand wooden fishing canoes are recorded. Establishment of legal standards governing this sector is an imperative.

Diversity of Actors in Charge of the Fight against Criminality at Sea. Maritime security has diverse stakeholders. Coordination of their actions contributes significantly to the success of a framework for fighting illegal, unregulated, and unreported fishing.

Many agencies are involved. The Directorate of Protection and Monitoring of the Fisheries defines the fisheries monitoring policy. Authorization of fishing licenses is done by the Directorate of Fisheries, in conjunction with the National Agency of Marine Affairs, which is responsible for checking the seaworthiness of vessels.

We have Customs. We have the High Authority in Charge of Coordinating Maritime Safety and Security and Protection of the Marine Environment. The Maritime Gendarmerie and other agencies serve the Directorate of the Marine Fisheries and the Directorate of Island Fisheries.

Each, in its field, fulfills obligations in the fight against illegal, unregulated, and unreported fishing. Thus, it is important that the involved administrations work



The trend: increasingly privatized, armed escorts at sea

synergistically to improve their legal and operational frameworks. However, the proliferation of laws and the need to translate them into operational procedures for ships at sea constitute additional challenges.

Temptation to Resort to Privatization of Maritime Security. The last issue relates to the ever-increasing recourse to private surveillance means in maritime security. This trend is born from the upsurge of criminal acts at sea and reduction of state means dedicated to maritime surveillance. It has limits in the legal sphere. Armed escorts go against national legislation as soon as ships enter territorial waters of a state. The responsibility of the states remains preeminent, and private security companies will do nothing but make the legal framework even more complex.

I cannot stress enough the need for establishment of a legal framework promoting international cooperation, particularly for hot pursuit of illegal, unregulated, and unreported fishing vessels. Overcoming this challenge will be an important step in the fight for the protection of the fishery resources. A more appropriate legal framework will also constitute an important lever for operational cooperation between the navies and the coast guards of the world for sustainability of marine biological resources.

Admiral Dr. Marsetio, Indonesia:

Thank you, Rear Admiral Cheikh Bara Cissoko. Thank you very much to all speakers presenting your papers. I would like to make a summary.

First, humanitarian aid and disaster relief from Japan: the global commons enables us to use the sea for transportation, trade, fishery resources, and energy resources.

Admiral Kawano also mentioned that maritime security includes freedom of safety of navigation and also maintaining maritime borders, based on the rule of law.

In recent HA/DR operations, disasters have been so large that they inflicted serious damage, requiring several nations to participate. Admiral Kawano also stated that the capability for HA/DR should be developed through shared experience and knowledge and by establishing procedures regarding common control and communication. Ongoing efforts developing a future capability for humanitarian assistance and disaster relief are PACIFIC PARTNERSHIP and RIMPAC exercises.

I would also like to give another example. Multilateral **EXERCISE KOMODO** was hosted by the Indonesian Navy in April of this year, attended by forty warships from eighteen countries around the world, under the flag of ASEAN Defence Ministers Meeting.

Developing a new concept of maritime security and building a maritime environment of peaceful development were presented by Admiral Wu Shengli. We should develop a new concept of maritime security, centered on common security, comprehensive security, cooperative security, and continuous security, which are complementary.

According to Admiral Wu, we should, first, facilitate multidimensional and multilateral communication, second, deepen open and pragmatic maritime cooperation, third, standardize maritime security's conduct, and fourth, cultivate naval officers based on future needs.

We heard from Pakistan. In order to find an enduring solution to the issue of piracy, we need to analyze the issue for regions affected by this menace, such as the Strait of Malacca, Somalia, western Africa, and Latin America. Pakistan acknowledges that the successful multilateral cooperation among Indonesia, Malaysia, and Singapore contributed significantly in solving the problem of piracy in their region.

The international approach toward tackling the menace of piracy in the future should focus on ensuring political stability, a robust and aggressive legal framework, cutting off the financial trails, regional capacity building, and strict adherence to best management practices.

Senegal addressed maritime security law. The challenges faced by Senegal's navy in the fight against illegal, unregulated, and unreported fishing are [complicated by an] inadequate legal framework; the diversity of actors in charge of the fight against criminality at sea, requiring strong coordination; and, alas, the temptation to use private means for monitoring and control, which will do nothing but make the legal framework even more complex.

It is time for discussion. There is an opportunity for the audience to ask questions relative to the four topics.

DISCUSSION

Vice Admiral Matthieu Borsboom, The Netherlands:

My question is for Admiral Sandila and Admiral Cissoko, and maybe Admiral Greenert.

It's about privatizing maritime security—how much responsibility should oil companies take in securing their trades? It was connected to illegal fishing, and connected to the more complex environment mentioned by Admiral Sandila.

For this community, it's very important to discuss how far we would accept private security companies entering the maritime domain. They're already there, of course, but it was raised three times in different angles. I'm interested to learn what your visions are on that particular question.

Rear Admiral Cheikh Bara Cissoko, Senegal:

Privatizing maritime security—and, more specifically, in our own territorial waters—raises a number of issues. We could categorize these issues, first, from the legal standpoint and then from the structural standpoint.

From the legal standpoint, most of our countries have not yet adopted laws on these various privatization efforts, even though there are private companies that carry out their activities in the Horn of Africa and off the shore of the Horn of Africa. Hence, well-written, clearly defined, precise, and accurate laws have to be drafted in order for the various stakeholders to come to our regions. Now to the armed component in territorial waters of our countries—this also raises issues, because it goes against our own laws and regulations.

The other point is the structural standpoint. Those private companies that would wish to carry out activities in our countries, first and foremost, would have to bring their own equipment and they would have to be armed in order to deal with the problem. Our countries are not prepared, yet, for this—to receive other countries, especially ships that might be armed with their own personnel that would also train and carry out exercises in the region. So there is a lot of work to do for coordination, but this has not yet taken off.

Last but not least, it seems like we are taking the easy way out—our governments, really. We truly need to find the appropriate terms to convince our governments to invest in maritime domain awareness, to guarantee the protection of the territorial waters that fall under their responsibility. If we should call on private companies to ensure protection, we will never make our own efforts to equip our navies or coast guards appropriately. The surveillance of our own waters is our responsibility. We need to have our staff, our personnel, well trained and equipped to carry out these kinds of activities.

Admiral Mohammad Asif Sandila, Pakistan:

Until some years ago, we had never heard of private guards on merchant ships. Today, merchant ships go around the world and, unfortunately, if they are pirated, hijacked, these people face very serious consequences. Previously, the pirates came, stole some ships, maybe ropes, some stores, and left. Today, they take these poor mariners, make them hostages, and ask for millions of dollars.

I'm not a mercenary man, but merchant ships have a big problem. They have to protect their crews that are on board, and there may be various nationalities on board. It is a desperate situation for merchant mariners and the countries that they are going into.

I'm not sure how much they like that they have to pay a lot of money for this. But as Admiral Cissoko pointed out, I would look at the responsibilities of the navies and the coast guards of the region, wherever the problem is, to provide a secure environment for the merchantmen that are taking trade from one place to another.

We saw some legal problems that have come up in certain areas, in certain countries. Some incidents have taken place where some people have lost their lives, as well.

It is a very complex situation from the point of view of the merchant navies. They want to protect their crews and cargo that they carry on board. On the other hand, it is, unfortunately, not good enough for the navies to be able to prevent this from happen under their noses.

Unfortunately, in the areas we are talking about, the navies either do not exist or if they exist, they are very weak. Look at the Gulf of Aden. From all over the world, ships are coming to protect maritime trade. It may be not a very welcome situation to have private guards on board. I only hope that it doesn't last very long and ships will start going around the world as free people, as they were centuries ago. But this problem looks like it is going to continue the way it is.

Commodore Walid Morsi, Egypt:

I would like to add a necessary elaboration to Admiral Sandila's comments. The BMP4 [fourth edition of *Best Management Practices for Protection against Somalia Based Piracy*] has a chart at the very end page. This chart includes a region that is highlighted by red, indicating that this is a high-risk area. The route for the international commerce passes through two choke points, one in the Gulf of Aden and the other up north in the Suez Canal.

No single incident was recorded at the Egyptian coasts, although you mentioned that some navies are not doing enough. We are exerting a huge effort to secure the Red Sea coast, and yet we are not excluded from this high-risk area.

It's a request for all attendees that the coasts of the Red Sea, the northern part of the Red Sea, should be excluded from the high-risk area recorded in the BMP4.

Admiral Mohammad Asif Sandila, Pakistan:

I did not make this slide. This is from the International Maritime Organization. I do take the point that you are making. I agree with you. But this must have been something by the International Maritime Organization.

Rear Admiral Lai Chung Han, Singapore:

Thank you, Admiral Marsetio, for moderating, and to our four panelists for excellent presentations.

My question draws from the session with Dr. Yergin, about energy security. My question is broad and addressed to all four panelists. What is your assessment of greater maritime cooperation in the area of energy security? If energy security, according to Dr. Yergin, is going to be increasingly important, how can navies of the world make that significant contribution to securing our sea lines of communication for energy security?

Admiral Katsutoshi Kawano, Japan:

You're referring to the security of energy, correct, in terms of transporting it and the security of that energy resource? If so, there are, of course, the various regions. There's the exclusive economic zone issue. That's also something that each of the countries is trying to secure and guarantee. If it is going to be from the standpoint of a resource for the entire world, I believe among the navies, we, of course, would

ideally like to participate and cooperate. However, this has to do with national interests as well. I, myself, do not have an answer for that particular question.

Rear Admiral Cheikh Bara Cissoko, Senegal:

Providing security of our sea lines to better protect trade, to better protect the transportation of energy sources—this is a regalian mission [mission of sovereignty], in my opinion. Every state is responsible for its own territorial waters and that means a regalian mission.

This can take place from a cooperative standpoint—a collaboration between states through information exchange, in order for various countries to better control the flow of ships through their own waters.

It also involves maritime domain awareness. At any point in time, one needs to be aware of the operational situation in the waters we are responsible for, have a complete picture. Then, one ensures a certain presence at sea with specific operations and interventions should there be piracy incidents or armed robbery of a tanker.

Admiral Mohammad Asif Sandila, Pakistan:

I fully agree. There is a big requirement for us to cooperate for maritime security at sea.

Unfortunately, merchant ships or mariners do not enjoy the perception [that other transportation modes enjoy]. I'll give you an example. If something happens to an aircraft carrying 250 people on board there is a lot of noise all over the media, everywhere. Unfortunately, we saw in 2010, '11, and '12 over three thousand people taken hostage in Somalia with around two dozen ships. Hardly anybody made any noise, mainly because the people working at sea—and I exclude the navies and the coast guards—are known to be people who will go from one port to another, have a bottle in hand, two girls on their arms, and that is the kind of image they carry. Unfortunately, that is why, perhaps, they do not get a reaction from the world, even when they are in trouble.

Having said that, I really appreciate the maritime community and the way they have dealt with these challenges in the last ten to fifteen years.

First, we saw it in the Strait of Malacca; this was a problem every day. I had the opportunity to pass through that strait. Even as a naval ship, you are worried. You don't know what is going to happen. But there came Singapore, Indonesia, and Malaysia. They formed escorts, and they have almost eradicated this issue. Now, very recently off Somalia, there is a huge number of ships operating there. Unfortunately, it is very difficult to sustain that kind of effort.

Maritime forces have to bring security at sea, whereas a couple of years ago, this was the job of the coast guards, police, or merchant ships themselves. All commanders who are around the areas where there are problems have to get together.

Unfortunately, the problem is—I go back to Somalia—there is nobody. Whom do you talk to? There is nobody who can control anything. Then, of course, there are criminals. This money is going all over the world. There must be some trail. The financial institutions need to be as aggressive as the navies are today. This requires a whole effort, bringing in navies, financial institutions, and everybody to make things more safe at sea.

Admiral Wu Shengli, China:

I touched on this question in my presentation. We should have a new concept of maritime security and create a safe maritime environment. In the new concept of security, there are four core values, which are common security, comprehensive security, sustainable security, and cooperative security.

You ask about energy security. For China, this is something that we pay a lot of attention to. We definitely attach great importance to this issue.

The PLA Navy is responsible for energy security in the maritime environment. Since 2008 the PLA Navy, in order to secure the sea lanes around the Gulf of Aden, has sent eighteen groups. We have sent eighteen groups of PLA Navy personnel and provided very effective and reliable escort missions, because we see security there as part of our security. Escorting more than six thousand ships—that is how we have made our efforts.

To secure energy in the maritime environment, we have to make concerted efforts, and we have to show our own respective responsibility. Everybody here has to think about what kind of responsibility we shoulder. We have to make our utmost efforts in order to secure security in the maritime environment.

Admiral Dr. Marsetio, Indonesia:

Thank you, Admiral Wu Shengli. Admiral Wu Shengli started with the concept of the four core values of the maritime security. I think the four core values [are] for energy security.

Rear Admiral I. Putu Yuli Adnyana, Indonesia:

My question I address to Admiral Wu. Thank you for your new idea to develop the new concept for maritime security.

I agree with your concept, but based on traditional and nontraditional concepts that already exist at sea, we would like to ask a question. Why do you favor developing the new concept of maritime security, rather than strengthening the existing cooperation, which we have under either Western Pacific Naval Symposium or International Maritime Organization?

For example, some countries already send ships to the waters off Somalia under United Nations Resolutions [[UN Security Council Resolutions 1816, 1838, 1846, and 1851](#)], which led to establishing [Combined Task Force 151](#). And I think China also sends as an individual country.

Also in the Malacca Strait this cooperation is already achieved very significantly, on the basis of the memorandum of understanding among Singapore, Malaysia, Thailand, and Indonesia.

So in my opinion, the concept already exists. We need to strengthen the existing cooperation rather than to develop the new concept. The new concept will take a long time to make it work properly.

Admiral Wu Shengli, China:

I think it's a very good question. Why should we come up with a new concept?

The reason is simple, because as the Chief of the Navy of the People's Liberation Army Navy, this is my first time to participate in a large-scale forum for navy leaders throughout the world. For that very reason, I have been thinking that the theme

and topics discussed at the International Seapower Symposium, this time, are very important, as CNO Greenert has said many times. The maritime security situation has changed. We need to face the security challenge, together.

The new concept that I raised here is for us to meet the common challenge. As you said, there is already existing cooperation. But if we just stay where we are, without going forward, then I think the theme of this International Seapower Symposium should be different. My suggestion to you is to really understand the theme and the topics raised by the U.S. Navy. They have tried and are trying to seek common consensus of all attendees so that we come up with a common resolution.

I don't know if I answered your question to your satisfaction. If not, we can talk off line.

Admiral Dr. Marsetio, Indonesia:

Thank you, Admiral Wu Shengli. I think you expressed your personal opinion on behalf of the PLA Navy, and maybe you would like to discuss later.

Admiral Jaime Muñoz-Delgado Díaz Del Rio, Spain:

My question is for the panel, in general. How are trends in maritime security affecting the design of fleets? Are we designing fleets in accordance with the new maritime security?

Admiral Mohammad Asif Sandila, Pakistan:

There has been a lot of talk, from a naval-development point of view, in the last twenty years about working on maritime security close to littorals, rather than on the open oceans. If that is the case, then the navies will have to think about onboard equipment that is a little different. The threat is coming from people who are not firing ballistic missiles, [or] any nuclear weapons. [The threats] are coming from shorter-range weapons, but creating more deterrents, more problems for the maritime community. In my view, the navies have to rethink how to deal with this problem, because this is now turning into an international problem. I only hope that the maritime security situation off Somalia is the last place where there's something like this happening.

I would think navies would have to reconsider the way they train, equip, and weaponize themselves.

Admiral Katsutoshi Kawano, Japan:

In order to adapt to the new maritime security, I don't think it is a good idea to change the navy into the coast guard. The navy has its own work and principles. Using that navy capability, we can address humanitarian assistance and disaster relief and antipiracy operations. Therefore, in the current environment, the design of the fleet is not going to be changed, as far as I'm concerned.

Commissioner of Police Dhanesh Rampersad, Mauritius:

My question relates to ecological disaster as a threat to maritime security. Given the large number of oil tankers on the seas in the years to come, I would like to know the panelists' views regarding an oil spill as a threat to maritime security.

Admiral Mohammad Asif Sandila, Pakistan:

I think this is a big problem. We have been lucky in the last several years. There haven't been big issues, mainly because the International Maritime Organization is making regulations more stringent for new oil tankers that go to sea. They will be double hulled and have various other protection systems to be able to carry fuel from one place to another. But, with so many ships going around, we can never say that it will be 100 percent safe.

The International Maritime Organization has already made a plan if—God forbid—there is a problem in any country or port. People from all over the region will help. We, unfortunately, had this problem in one of our ports in 2003 and 2004. Everybody came from all over, and the International Maritime Organization came and helped.

The international community has to make efforts to clean up if there is a problem. I hope these problems don't come up, or we pray that rough seas will come and wash away everything. There are so many other things. God has his ways and nature has its ways to clear up things.

I agree with you—this is a big problem, and it is not for navies to be doing these things, as Admiral Kawano said. It is for the International Maritime Organization, other maritime organizations, and port authorities to be looking into this. We have a very different job. If we concentrate on that, and we can do it, I hope that will be good enough for us.

Admiral Wu Shengli, China:

The answer given by my colleague is very good. This is not an issue that can be resolved by navies of the world alone. It should be an issue that all countries should make an effort to resolve. The best resolution is to come up with methods and efforts under the framework of the United Nations.

The question is very good. It really puts us in a preemptive mode. In China, we have an idiom and that is "You check your roof before the raindrops come down." You are prepared.

Preparing for such spills is totally necessary, or for a tanker abducted by pirates or terrorists. They could explode the ship, causing a large-scale oil spill. This possibility exists. If the oil tanker is on high seas, it may not be that disastrous to people on land. However, if this happens in a strait, say the Strait of Malacca, that would be disastrous to the region and to the world as a whole.

Captain Sacheus Gonteb, Namibia:

How high on the priority list is international cooperation to combat maritime security threats and monetary losses from them?

Admiral Wu Shengli, China:

I hold the view that all navies throughout the world are the same. They should be strategic, comprehensive, and international in nature. For that very reason, the Chinese navy has always borne in mind that we are an international force. We put emphasis and importance on international cooperation.



Enhancing Coalition Operations

General James N. Mattis (Ret.)

Distinguished Visiting Fellow, Hoover Institution, Stanford University

Professor Thomas Mangold:

Our guest speaker is no stranger to the Naval War College, nor I would imagine to most of the delegates here. He is retired general James Mattis, U.S. Marine Corps, who currently serves as the Annenberg Distinguished Visiting Fellow at the Hoover Institution, in Palo Alto, California.

The general is a graduate of Central Washington State University and the National Defense University. During his forty-two-year military career, he commanded at multiple levels, including—and this is impressive—First Battalion, Seventh Marines during OPERATION DESERT STORM; First Marine Expeditionary Brigade during OPERATION ENDURING FREEDOM in Afghanistan; and First Marine Division during OPERATION IRAQI FREEDOM.

On the joint side, he commanded U.S. Joint Forces Command and NATO's Supreme Allied Command Transformation in Norfolk. His last active-duty assignment, of course, was as commander of U.S. Central Command, in Tampa, Florida.

We are honored to have General Mattis speak with us.

General James N. Mattis (Ret.), United States:

Thank you, Dean Mangold. Thank you to Admiral Greenert, my old shipmate, our host, who invited me, and to so many of you here that I've known over the years. It's an absolute pleasure to be here.

I appreciate the opportunity to share my thoughts. When you retire, you look back on what you learned. You feel a little bit of an obligation to run the elevator back down, open the door, bring on anybody who's willing to get on the elevator and say, "Here's what I learned," and go to the level where you can say, "You're now ready to make your own mistakes, not the same ones made over many years."

I speak to you on this subject as a joint U.S. force commander in the Middle East, but also as one who had sixty-eight nations represented on my staff. It was more than just a U.S. command.

MILITARY COALITION OPERATIONS MORE EASILY ACHIEVED AT SEA

The bottom line up front is that, from my experience, navies and naval thinking have a unique opportunity to enhance coalition operations. There's a number of reasons for that. I will tell you that the most valuable forces I generally had at my beck and call were the naval forces. They were the most valuable because they were the most relevant and most flexible.

Here in Newport—a beautiful day in this corner of the United States—we’re meeting at a time when the world is awash in change. It’s everywhere. We see violent ideologies, climate change, military force being used to change European borders. We see some nations acting badly. The list goes on. The change is constant. A lot of people are finding it’s very hard to find a mooring point—an emotional, psychological, intellectual mooring point—in this world.

We’re reminded, as a result, that the international system that we count on to promote peace and stability is not self-sustaining. Saying someone, or some group, is on the wrong side of history is not going to be a sufficient deterrent, if we wish to turn over to our sons and daughters a better world. History is, after all, [ambivalent] as to who writes it. We all can read history, and see that good men and bad have written history.

With all the tumult in today’s world, stabilizing efforts are critical to deal with the disorder. No matter how the second law of thermodynamics manifests itself these days, without a collaborative and coherent effort to maintain peace, including on the oceans and in the coastal waters, our world’s going to be in deeper trouble. This is a global issue. It is a regional issue. It is a national issue. And it’s a local issue.

Interdependence today recognizes increasing global trade, and increasing demand for marine resources. This increases use of the global sea commons; it offers both benefits and dangers. As Admiral [Mohammad Asif] Sandila of the Pakistan Navy notes, the most significant challenge for our navies today is to ensure a safe and secure environment on the sea, with inherent missions drawing his navy, and many others, into collaborative efforts.

The transnational threats are well known to this audience: piracy, terrorism, human trafficking, weapons trafficking, to include concerns about trafficking, potentially, of weapons of mass destruction.

History is a good teacher. Throughout history, nations have had to address complex issues dealing with vulnerabilities, larger than any one nation could address. If there is one clear lesson that we can take from history, it’s that nations with allies, nations that can act in concert with others, are stronger and more capable than nations standing alone. There’s nothing new here.

Yet, as Admiral [Bernard] Rogel, our French shipmate, noted, the protection of national interests, by responsible nations, lends itself well to coalition operations. Our French shipmate goes on to remind us that there are both political and military components in decisions to join coalitions.

In my former role as a U.S. joint force commander, for a very tumultuous part of the world, routinely I found it much easier for naval forces to meet the conditions for teamwork across national lines, much easier than could land-based forces. Politically, we in the naval services can more often act together on matters pertaining to security than could our armies ashore.

You have to ask the question, why is that? All politics are local, whether in Newport, Rhode Island; Riyadh, Saudi Arabia; Rio de Janeiro; London; or anywhere else in our interconnected world. Navies operating on the global commons provide our political leaders with less contentious options, in the form of political maneuver room, to operate jointly when the same type of collaboration might well be impossible ashore.

Over my forty years as a U.S. Marine and naval officer, I operated many times overseas, and especially in the often tumultuous Middle East. I never operated in an all-American formation.

This is an age when we need more collaboration to keep the world safe and set conditions for prosperity. Yet operating ashore brings increased scrutiny, political impediments, and increased force protection issues, both over the horizon and even in the littorals. Sovereignty issues present fewer obstacles to naval teamwork than do operations on the land, the latter demanding higher levels of political commitment and risk to our political leaders.

If there's a measuring stick for maritime security today, it lies in preventing disruptions that adversely affect prosperity, and protecting life. We carry out these missions for sustaining an international order that, you know very well, benefits both individual nations and the larger coalition of nations devoted to peace and prosperity.

From my experience, the national political conditions needed for international military coalition operations are more easily achieved at sea by navies and coast guards.

In this age of turmoil, when global peace and trade are threatened, the world has an increased need for stabilizing forces that can deal effectively with the menace. There is an increased need for a global network of navies—thus, the theme that draws us here—for partnerships on the scale of what so many of your nations have provided. Promoting peace and lessening vulnerabilities show us what we can do by working together.

As examples, in the eastern Mediterranean, [Maritime Task Force in United Nations Interim Force in Lebanon](#) supports beleaguered Lebanon. In the Gulf of Aden, [Combined Task Force 151](#) has taught the pirates the errors of their ways. In the western Pacific, an international maritime response helped the Philippines recover from Typhoon Haiyan. In the southern Indian Ocean, a dozen nations worked together to search for a missing airliner. In the Strait of Malacca, Singaporean and Indonesian units jointly maintain maritime order in the strait. In a host of other situations, we find coalitions efficiently at work.

In these circumstances, partnerships provided the essential component as nations recognized noncontroversial facts: first, that it was in their best interests to work together, and second, that naval forces offer a unique opportunity to work constructively with others.

THE DETERRENT EFFECT OF MARITIME PARTNERSHIPS

There is another aspect to the political framework, one in which naval coalition efforts contribute directly to stability. The deterrent effect of maritime partnerships can demonstrate national will in a penetrating and yet moderating fashion.

For example, when Iran was sending out bellicose messages about U.S. ships being prohibited from transiting international waters through the Strait of Hormuz, the next transit of my ships through the strait was led by French and UK navy combatants, demonstrating firm international commitment to freedom of passage through a key waterway.

These ships also demonstrated the value of decades of standardization efforts, permitting these naval elements to come together on short notice, and smoothly integrate the passage; and the short notice was counted in hours.

It sent a strong message in a very nonbelligerent, but authoritative, manner, in a strait that the crown prince of [Abu Dhabi in] the United Arab Emirates, Sheikh Mohammed bin Zayed, had noted was so critical to the global economy that it was an international responsibility to keep it open, reminding Iran and the world that using the sea for legitimate reasons requires limiting mischief by those who would act in criminal or illegitimate ways.

History teaches us that unpredictable behavior is destabilizing. As Iran's political rhetoric heated up, specifying threats to close the Strait of Hormuz using mines and to do so at [Tehran's] will, I reflected on Crown Prince bin Zayed's words. It fell to our naval forces, it fell to a maritime coalition, it fell to twenty-nine nations that put their sailors together from six continents to come together and conduct an international antimine exercise—not an anti-Iran exercise—to demonstrate, using naval forces from across the globe, that the international community had the political and military capability to keep the strait open. In the aftermath of that exercise, the destabilizing, dangerous rhetoric out of Tehran ceased.

These naval forces did much more than rehearse mine-clearing operations in the Gulf. They demonstrated their nations' political resolve, and gave political clout and strategic reach to their national leaders. These naval forces calmed the situation. They also signaled to Tehran that bellicose rhetoric was working against its own interests, isolating it, losing its respect in the international community; and its irresponsible outbursts were instigating an international naval coalition in response.

The outcome was a lessening of the Iranian rhetoric and a reduction in the potential for miscalculation, and it bought time for diplomats, using economic and traditional tools of statecraft to change Iranian behavior, without a shot being fired.

A NAVY CAN BRING QUALITY; A COALITION PROVIDES QUANTITY

Navies, properly integrated and aligned by each nation's guiding principles, can come together, aggregate for a purpose, disaggregate when no longer needed, and reaggregate, again, when needed, and as the situation dictates. They do so with a fluidity that's reflected in their maritime operating environment and operating well in that grey zone that Admiral [Katsutoshi] Kawano of the Japanese Maritime Self-Defense Force highlighted recently. The grey zone is a time and place, all too well known to you in this room, a zone where much hangs in the balance between peace and war.

No force is more formidable than when allied by common interests. By its nature, a global network of navies is one of the best tools to gain one more year of peace; or one more month of peace; or one more week of peace; or even one more day. They gain essential time for diplomats to work their magic, to avoid war if possible. Sometimes even in today's world, when the best ambassador seems to be a man of war, realistically, the best we in uniform can do is try to buy the time needed for men to listen to their better angels, and for diplomats to impose reason over impulse.

As Admiral Rogel said, and our own experience reminds us, the political decision to form a partnership or coalition then becomes a military matter when a situation arises, and it's time for us to stand and deliver, to work together harmoniously to gain a partnership's or a coalition's potential synergy, to achieve the requisite

level of cooperation among naval units, to reassure our friends, and to temper our adversaries' designs.

To do all that, we know we must boost our outreach to each other and achieve increased operational capability in advance of the surprise crises that we know that Mother Nature, or lawless elements, or belligerent parties will surely throw in our path.

In advance of the crisis, time spent preparing and working together will not have been wasted. These crises will not wait for us to get our act together, nor will our leaders accept that a situation or mission was difficult as a reason for failure on our part.

When the political decision is taken to unite, difficulty will be the one excuse that history never accepts from the naval leaders who are given the responsibility for the mission. Learning is not compulsory, and neither is survival. We must learn through practice how to make partnerships work.

Coalition operations are the PhD level of complexity. They are hard. To quote a wise leader from the last century, the only thing more difficult than fighting with allies is fighting without allies.

Should deterrence alone not work, should we have to fight alongside each other, should we need the land forces, sea-based forces can shift to a war footing without pause.

The U.S. Chief of Naval Operations has written that no one nation, alone, can ensure the sea is safe for lawful, legitimate commerce. We all know that no single nation can limit the miscreants who threaten local or international security.

If we can really practice plugging into each other and continue improving the rotating leadership concept that's been demonstrated so well by current combined task forces, then when political circumstances align to draw us together in the crises ahead, we will have set the conditions to firmly demonstrate our combined nations' commitment to stability and prosperity.

I would also say, young ship commanders will then find a welcoming coalition framework, when they come over the horizon, to plug into one another's command and control, and get to work in the next complex operation.

When [Vice] Admiral [Evangelos] Apostolakis prioritizes quality over quantity in the Hellenic Navy, he reminds us of our strengths in an age when it's the quality of our commanders, the quality of our crews, and the quality of our technology and our ships that give us the edge. At the same time, we must remember that it's co-operation that brings us the quantity, and the reach, that makes our force decisive.

We need the quality that our navies are developing. We need the quantity that can only be found in coalition operations. That decisiveness will be found in those trusted, practiced partnerships in coalitions and alliances.

WHAT JANE AUSTEN SAID

In summary, in an increasingly globalized world, displaying a lot of turmoil, navies are going to play an increasingly important stabilizing role. Naval forces, with associated marine and coast guard elements, can work synergistically in coalitions, without much of the political or security baggage inherent in land or air forces. The very flexibility of naval forces, if properly prepared, can buy time and reduce the risk of open hostilities.

Properly composed naval forces have significant responsibilities today that are growing. They are responsibilities that can only be met by partnering with each other, by emphasizing our ability to work together in all corners of the seven seas, and by providing sound options to our political leadership. We do this through operationalizing our integrated capabilities; that's done, of course, through practice.

Assembled here in this room is arguably more real power, relevant to the fundamental issues of our day, than anywhere else on earth. I would say that even if the United Nations General Assembly was meeting in New York City.

I have seen navies working together calmly on intractable situations. I have seen them demonstrate national will and international resolve at the time and place needed, only to gently disappear over the horizon when the issue is resolved.

Naval forces have proved in humanitarian and search and rescue missions that nations with differences can nonetheless work together, setting a more optimistic tone in international relations. Navies have proved they could sustain cooperation when other diplomatic or military options were less than productive.

Admiral Greenert has made clear the Americans wish to work in partnership alongside other navies, that the U.S. Navy does not believe that all the good ideas come from the navy with the most aircraft carriers, that our Navy is not just willing to listen to you; rather, the U.S. Navy is eager to share leadership, and be persuaded by the best ideas, regardless of where they come from—not just willing to listen, but willing to be persuaded.

Relations among you, the senior naval leaders of the world, are more important than transient differences over insignificant political matters that sometimes happen even among friends. I have no doubt that many of you will be called on to work together when trouble looms. When that call comes, it will carry the hopes of many people. The only question, really, is, will you be ready to lead when the time comes to work together?

I've departed active duty, and am no longer privileged to sail alongside you. Just let me close with a short word of salute for you in words written by an English writer, Jane Austen, two of whose brothers served in the Royal Navy and rose to rear admiral. Of you in this room, she said that sailors have more worth than any other men. I'm reluctant to say it, being a Marine, but I have to admit, I agree with what Jane Austen said.

From this former naval officer, proud to have sailed with you in our younger days, I do wish you fair winds and following seas. I also know the challenges you will face, and I know you will make a difference in this world. Thank you for the opportunity to share my thoughts with you.

DISCUSSION

Unidentified Speaker:

I followed very closely your remarks, especially when you asked our various heads of navies, here, to be ready and willing to work on a coalition basis. Indeed, our interests and our objectives are shared.

There is the issue of private military companies that are not state militaries. In the globalized world that we live in, where nations have to work in coalitions, what

will be the role played by those private military or defense companies? The Chief of the Navy in Senegal [Rear Admiral Cheikh Bara Cissoko] clearly said it this morning, that the prerogative of states is an important one, in terms of our seas and international waters. In terms of the maritime domain, what should be the role of those private military companies? Should they become involved, or is it mostly with neighboring countries' navies and services that we should be working?

General James N. Mattis (Ret.), United States:

Merci beaucoup. I have a lot of reservations about private security companies ashore. I have had bad things happen. They were not under my military authority. The result was problems for my president, and a disruption of a sense of moral, ethical obedience to orders. So I have some concerns about this.

In the maritime domain, I think any civilian master of a ship should have a way to defend himself if he's in pirate-infested waters. If that means, as part of his crew, he has an embedded security team, I understand that, so long as the weapons are declared when they go into port, ahead of time to the port master; they're locked up while they're in port; and they're only unlocked when they go back out in international waters.

I am much more comfortable saying cooperation must be between navies. We don't need more private armies at sea. I've seen what happens on land with them. It's not to say that it's completely a bad thing. But I think in a cost-benefit analysis—the cost of having them out at sea rather than lawfully composed forces, disciplined, professional forces—that cost outweighs the benefit, other than embedded teams in pirate-infested waters.

Rear Admiral P. Gardner Howe III, United States:

You included the quote about the only thing more difficult than fighting with allies is fighting without them. As you look back on your time as Commander, U.S. Central Command and the coalition that you were working with, could you share some observations on the key difficulties you encountered and how you and the staff overcame them?

General James N. Mattis (Ret.), United States:

Yes. Let me first speak to the technical problems of coalition operations. Every nation has its own secrets. We accept that. No problem. The challenge is when we are unwilling to share the very information that must be shared for a coalition to work together. I would point the finger at my own forces before I pointed it at anyone else. We all have this issue. There are sensitive intelligence collection means that are sometimes revealed if we say what we know.

We simply have got to find a way to share more when people come in. If you're going to have people putting their lives on the line, you're going to have to come up with a basis to share the information they need to carry out their operation.

Frankly, even as a four-star, I was not interested in the means taken to collect the intelligence I was given by the Americans. I don't think that's an automatic "Well, we can't share that because of how we got it." So, we've got to get better at the technical side.

To sum up what I learned over all those years—and, again, I've never fought in an all-American formation—the point I would make is that operations happen at the speed of trust, not the speed of electrical transfer of information, not the speed of a ship or an airplane or a tank. They happen at the speed of trust.

If you have officers who are tactically and technically credible, they're good officers. That's not enough in coalition operations. They must be able to provide leadership across national lines to make this work.

What Admiral Greenert has imposed on the U.S. Navy is that you will be open, not just to listening to others. You'll be open to being persuaded by other people's ideas. Part of the way to address this, Gardner, is to understand why it's difficult for military people to work together.

You and I earned our self-confidence. We created our self-image, because we could find that aircraft carrier at night, and land that airplane on it in a storm. Out of that came our sense of confidence as naval officers. We know how to take a submarine under, bring it back up, and operate. We know very well how to bring it alongside, and tie it up, and how to employ its weapon systems. We got used to going to schools where we all looked the same, dressed the same, talked the same.

When you go into coalition operations, if you fall back on your comfort zone, if you fall back on your formative years, then you are not going to employ everyone. They don't look like you; they don't dress like you; they don't talk like you. At that point, you are not getting the synergy, the collective will, the collective intellect that you would otherwise get. It's the worst thing you can do as you rise to the levels that you and I were fortunate enough to get to: to fall back to your comfort zone. And therein lies the real problem.

The technical issues, the intelligence issues, I'm convinced we can overcome. I have seen them overcome, among people that you would never think would work together. I have seen this. I know we can do it.

What you cannot overcome is a commander at the higher levels unwilling to create harmony in the organization. Attitudes, especially in coalition operations, are not taught, even at your wonderful, magnificent War College. Attitudes are learned from one another, and especially from the highest-ranking officers, who have the persuasive force of personality to impose their will over the force.

That falls to whoever the combined task force commander is. He or she has got to say, "This is the way it's going to be," and then make certain that if you have an officer who cannot work with someone else, you remind him or her one time, "You're more help to the enemy right now, or the adversary, than you are to us." The second time, you simply have to tell the officer, "I don't care how tactically brilliant you are, you are too disruptive. You go home. Your leadership is obsolete."

That's the way I would address the issues that strike to the heart of the efficiency of a combined task force.

Panel Discussion Two

Enhancing Coalition Operations

Moderated by
Admiral General Jaime Muñoz-Delgado, Spain

Panel Members:

Admiral Tan Sri Abdul Aziz Jaafar, Malaysia
 Fleet Admiral Julio Soares de Moura Neto, Brazil
 Admiral Bernard Rogel, France
 Vice Admiral Matthieu Borsboom, The Netherlands

Professor Thomas Mangold:

This panel is pretty important. It's focused on ways to enhance coalition operations and will be moderated by Admiral Jaime Muñoz-Delgado, chief of the Spanish Naval Staff.

He joined the navy in 1971, and served aboard a wide variety of naval vessels. Ultimately, he commanded both surface ships and submarines, including LST *Hernán Cortés* (L-41) and the Spanish Navy submarine flotilla. In addition to numerous overseas deployments, he participated in the first Gulf War in OPERATION SHARP GUARD. His assignments ashore have been just as impressive, culminating a few years ago as Commander of Logistic Support Command. He attended staff courses in both Great Britain and Spain. We are indeed honored to have a naval officer with such a fine record to be with us today.

He will be assisted on this panel by Admiral Aziz, the chief of the navy for the Royal Malaysian Navy; Admiral Moura Neto, Commander of the Brazilian Navy; Admiral Rogel, Chief of Staff, French Navy; and Vice Admiral Borsboom, Commander of the Royal Netherlands Navy.



Panel Two, L-R: Admiral Muñoz-Delgado, Admiral Aziz, Admiral Moura Neto, Admiral Rogel, Admiral Borsboom

Admiral General Jaime Muñoz-Delgado, Spain:

For me, it is an honor and a pleasure to be here on this panel as the moderator of four chiefs of navies, four admirals with past experience in coalition maritime operations.

Thank you to Admiral Greenert for hosting this impressive symposium.

Nothing new is said if I state that we live in an ever more globalized world where the sea is an essential element in this bonding process. World trade and shipping are absolutely dependent on the safety of the sea lines of communication. In fact, the good use of the sea is a fundamental requirement for the growth and development of nations.

But the sea is not only a highway for trade and shipping but an impressive pool of rich resources. The sea, more specifically the high seas, is one of the so-called global commons. It is of paramount importance to safeguard the proper use of this common good.

Julian Corbett [author of *Some Principles of Maritime Strategy*] stresses the importance of sea control. In this global world, his reflections only enhance [the importance of] the right of transit. Securing free use of sea lines of communications, whether for commercial or military purposes, is still perfectly valid.

But in this present multilateral and globalized world, as some of the speakers said, a single actor cannot possibly ensure the good use of the sea. As in the past—and there are many examples in history—coalitions and alliances are necessary to exercise sea control, both locally and globally, either provisionally or permanently.

Coalitions have different and wide-ranging features. Some show clear purpose. Some of them have only a political nature and, therefore, are of no relevance to this panel. Others are more operational and will be discussed by the speakers.

Among the advantages of coalition operations, the following stand out. They confer legitimacy to the operations of nations and to specific goals. They reduce costs since they are served by several members. Operational risks are shared. Unity of action is a strength. Different skills, capabilities, sensitivities, and talents are added.

On the other hand, the cons can be the question of command, which is a clear constraint. National interests are not always shared by all coalition members. There are different legal considerations and interpretations. Special mention should be made of interoperability as a sine qua non condition to arrange any coalition.

Most of these elements may not be expounded on in these presentations, but will probably be discussed in the following debate.

Instead, we are going to focus on the enabling of coalition operations and, particularly, on the issues related to interoperability and the wide and comprehensive picture of what is happening in the theater of operations.

The four panel speakers will address the scheduled topics of the agenda. The first presentation will deal with the topic of communications and use of compatible equipment. We must be capable of communicating efficiently, with compatible systems and with common protocols. What is simple when operating within the framework of regional organizations like NATO gets more complicated with wider and more global participation of other actors.

Malaysian admiral Tan Sri Abdul Aziz Jaafar will address challenges of global naval protocols in communications. Admiral Aziz, Royal Malaysian Navy, has held various appointments at sea and ashore, and has served aboard many operational ships at sea. He has commanded attack craft, an offshore vessel, and a missile corvette. Admiral

Aziz is also a graduate of the Naval War College's Naval Command Course and a graduate of Salve Regina University, located in Newport, Rhode Island.

Admiral Greenert said that we have a common environment and common interests. We can also say we don't have a common way of exchanging maritime domain information, and not even a common way of executing modern maritime security operations. This is a challenge for all of us. Some of these questions should be answered by the panel speakers.

Admiral Tan Sri Abdul Aziz Jaafar, Malaysia:

Admiral Greenert, Chief of Naval Operations, esteemed moderator, fellow panelists, distinguished heads of navies and coast guards, ladies and gentlemen, greetings. First, I express my sincere appreciation to Admiral Greenert and the U.S. Navy for hosting this very important symposium. It is good to be back here again. Thank you for the honor to be one of the panelists in this Twenty-First International Seapower Symposium.

One of the most exciting things I observe among us is the desire for deeper cooperative efforts to promote global solutions to common maritime challenges.

I would like to take this opportunity to thank all friendly navies for your contribution in the search for Flight MH370, and for the condolences and sympathy for the tragedy of Flight MH17. We were very touched by the support shown by our neighbors and international partners.

I will speak on the "challenges of global naval protocols and communications," particularly looking at the need for common safeguards and means to limit mutual interference and uncertainty with encounters at sea.

Conceptually, the global naval protocols and communications can be generally understood as a mutual framework for the proper exchange of information when navy ships meet each other at sea. This framework serves as a means for navies to safeguard rights, freedoms, and obligations at sea. It is also intended to enhance international cooperation and transparency in use of the sea.

Today's maritime security environment is highly complex, with numerous conflicting claims and increased naval activities at sea; hence, there is a need to find a balanced approach to avoid misunderstandings. As we approach creating a greater partnership in enhancing coalition operation, the need for global naval protocols and communications cannot be underestimated.

There have been increases [in the number of] incidents of naval standoffs in Southeast Asia and Northeast Asian waters and also in other parts of the world. At the recent ASEAN [Association of Southeast Asian Nations] Defence Ministers Meeting in Myanmar, all leaders were concerned over recent increased tension in the disputed South China Sea. They called for real progress on a long-delayed code of conduct, or COC, to lay down rules of engagement in the area. There is a growing fear that such incidents might escalate out of control and that a framework to minimize this danger is now deemed necessary.

EXISTING RULES AND FRAMEWORK

The requirement to adhere to international regulations on common safeguards at sea is nothing new. It has been in existence since the 1970s. Its realization was basically

due to the nonobservance of the 1972 [International Regulations for Preventing of Collisions at Sea](#), and that loss of life was unnecessary and could be prevented.

Allow me to share the Royal Malaysian Navy's and the Indonesian Navy's experiences. We adopted the MALINDO Prevention of Sea Incidents Cooperative Guidelines in 2001, drawing on the [Incidents at Sea Agreement](#) (INCSEA). This reaffirms our commitments to reducing the likelihood of conflicts while conducting activities in the disputed maritime areas. It serves as a basic naval protocol, where we exercise common safeguards in the conduct of our activities to limit mutual interference that might complicate or escalate tensions, including refraining from any use of force against each other. It is a simple guideline, made "by a sailor, for a sailor," which largely contributes to its success in fostering closer relations between the Royal Malaysian Navy and the Indonesian Navy.

In April this year, during the [Fourteenth Western Pacific Naval Symposium](#), in Qingdao, China, the importance of the global naval protocols and communications were discussed among the twenty-two member nations and the three observer nations.

The deliberation on the [Code for Unplanned Encounters at Sea](#), or CUES, started two years back, in 2012, in Kuala Lumpur, during the Thirteenth Western Pacific Naval Symposium. I am glad to inform everyone here that CUES was adopted after two years of deliberation. It is a great achievement. We are ever grateful to Admiral Wu Shengli and the PLA Navy for the great effort in facilitating its adoption. Please give him a big round of applause. [Applause]

With regard to submarine operation, the same importance must be placed on submarine safety. Some of the submarine incidents or interference that have happened worldwide clearly demonstrate the ever-present danger of submerged activities. In this case, adherence to the protocols for the Prevention of Mutual Interference (PMI) and Waterspace Management are vital to avoid any possible underwater mishap among friendly navies.

CHALLENGE: FULL IMPLEMENTATION BY COMMANDERS

The challenge before us is the implementation of the existing global naval protocols by our commanders. A global naval protocol must have four key points.

Simplicity. The protocol shall not introduce complex regulation. For navy personnel, simplicity means that it is easy to codify, condense into operational instructions, and execute.

Operational Focus. The contents of the protocol must be negotiated by sailors, not by diplomats. This would minimize political interference and permit navies to handle any untoward incidents.

Frankness. This protocol should promote and facilitate navy-to-navy consultation, so discussions can be done cordially, but professionally, among brothers at sea.

Accountability. In the event of any incident, the parties involved shall willingly accept responsibility, and endeavor to resolve issues.

A BALANCED APPROACH TO AVOID MISUNDERSTANDING

As we seek a balanced approach to avoid misunderstanding and conflicts so as to maintain good order and stable governance at sea, I would like to propose the following measures.

First, consensus building. Consensus building provides frameworks for strategic discussions and productive exchanges of views on many issues affecting our respective regions. In the ever-changing architecture of the current security dynamic, we need to get consensus to achieve mutually acceptable resolutions. This is important so that all parties can work together comfortably and at a comfortable pace.

Second, a commitment to cooperation. As we seek peace and stability, we must also acknowledge the fact that commitments to cooperation are vital in the current maritime security environment. We have differing policies and agendas to uphold, but as long as we are committed to cooperating with one another, we can keep our waters safe and free from any possible disruption that would threaten our regional and global security.

In closing, the adoption of global naval protocols and communications, like INCSEA, CUES, and PMI is necessary to maintain good order and stable governance at sea. They should not only be supported but also be exercised thoroughly among friendly navies.

Communications among chiefs of navies and operational commanders needs to be at a personal level, where communication is just a phone call away. This is important to build trust and to eliminate misunderstanding. From my own experience, wide and extensive relations with friendly navies, particularly at a very personal level, would facilitate effective maritime security networks. It would also assist us in building up our capacity for regional collaboration in various fields.

INCSEA, CUES, and PMI are the finest examples of effective global naval protocols and communications. They serve as standardized protocols for safety procedures, basic communications, and basic maneuvering instructions during unplanned encounters at sea. These are the product of “brothers at sea” as we seek to increase our proficiency in communications and establish good behavior at sea.

The adoption of CUES among the navies in Western Pacific Naval Symposium is expected to prevent misunderstandings, miscalculations, and mishaps at sea. I echo the view of Admiral Wu Shengli that the same arrangement can be adopted in other regions too, ensuring the safe operation of naval vessels, thus preventing untoward incidents at sea.

Admiral General Jaime Muñoz-Delgado, Spain:

Thank you very much, Admiral Aziz.

Brazilian Navy admiral Julio Soares de Moura Neto will talk about the challenge of having a global picture of the maritime domain in his presentation, “A Universal Common Operational Picture.” In order to make decisions, it is important to have clear and comprehensive maritime domain awareness. For global operations, like counterpiracy or sustaining freedom of navigation, awareness for appropriate decision making should be global. In this sense, all actors involved, both civilian and military, must contribute to this common effort.

Fleet Admiral Julio Soares de Moura Neto, Commander of the Brazilian Navy, is a native of Rio de Janeiro and a career surface warfare officer. He has commanded several ships and shore establishments, to include the destroyer *Mariz e Barros* and Destroyer Squadron One. As a flag officer, he commanded the Almirante Alexandrino Instruction Center and served as Director of Personnel, Commander of Naval Operations, and Director of Navigation.

Fleet Admiral Julio Soares de Moura Neto, Brazil:

I thank Admiral Greenert for the warm welcome to this beautiful city, Rear Admiral Howe for the excellent organization of the symposium, and Admiral Muñoz-Delgado, moderator of this panel, for his kind words. It is a great pleasure to be in front of such a distinguished audience.

I have the opportunity to say a few words about maritime domain awareness, a universal common operating picture. Initially, I will consider general issues related to maritime security. Traditional maritime crimes and new threats, such as piracy, drug trafficking, illegal immigration, terrorism, and the smuggling of weapons, have affected international shipping and the maritime security of several countries represented in this symposium. It's clear that the global challenge of maritime security cannot be addressed [by any single nation]. Only a collective effort can face it.

In the search for a common solution, there are several ongoing initiatives, such as countries' commitments to adjusting their domestic legislation to international maritime law and information exchange through integration of the maritime traffic control system. Intelligence and operational data exchange and conducting of operational exercises are very important, too. They increase interoperability and mutual trust.

THE BRAZILIAN NAVY IN MARITIME SECURITY

I present the role of the Brazilian Navy in strengthening maritime security, through its direct contribution in various regions. Acting under the aegis of multilateral organizations, we have increased our participation and responsibilities in peacekeeping missions, such as [United Nations Stabilization Mission in Haiti](#), or MINUSTAH, led by Brazil since 2004.

Since 2011, a Brazilian rear admiral has been in command of the [Maritime Task Force in the United Nations Interim Force in Lebanon](#) [UNIFIL] and a Brazilian Navy brigade with embarked helicopters has been playing the role of the flagship. This is our first maritime peacekeeping mission, and the first time that a non-NATO country is in charge of that naval force.

Noteworthy is our effort to increase international cooperation in monitoring, preventing, and combating drug trafficking in the Caribbean Sea by designating a Brazilian naval liaison officer for the [U.S. Joint Interagency Task Force South](#), as well as assigning Brazilian Navy ships to [OPERATION ATLANTIC WATCH](#).

We also have an officer and staff participating with the Combined Maritime Forces in Bahrain, aiding commercial ship security by combating piracy in the Gulf of Aden and off the coast of Somalia.

To increase interoperability and develop mutual trust, the Brazilian Navy has been taking part in several multinational exercises such as [ATLASUR](#) with Argentina, South Africa, and Uruguay; [IBSAMAR](#) [India–Brazil–South Africa Maritime] with India and

South Africa; **JOINT WARRIOR** in NATO; **PANAMAX** in the Caribbean Sea; **UNITAS** in the South Atlantic; and composite training unit exercises and joint task force exercises with U.S. Navy battle groups.

The Brazilian Navy also has taken part in exercises with our South American partners, such as **FRATERNO** with Argentina, **BOGATUN** with Chile, **COBRA** with Colombia, **BRAPER** with Peru, **ATLANTIS** with Uruguay, and **VENBRAS** with Venezuela.

Brazil has been supporting the **Zone of Peace and Cooperation of the South Atlantic**, with the aim of promoting regional integration and maintaining peace and security in the South Atlantic region, as well as keeping it free of nuclear weapons.

At the same time, the Brazilian Navy is developing partnerships, such as the Naval Cooperation Agreement Brazil-Namibia, in which we provide support for the Namibian Navy development, including its Marine Corps. We have collaborated with a force of almost two thousand. It is worth noting the recent creation of the Brazilian Naval Mission to Cape Verde and support to the São Tomé and Príncipe Coast Guard.

In recent years, we have increased our friendship and cooperation with Africa's west-coast navies and coast guards. For example, in 2012 and 2013 our three 1,800-ton, *Amazon*-class offshore patrol vessels conducted maritime security training and exercises with navies and coast guards of Angola, Benin, Cape Verde, Cameroon, Equatorial Guinea, Ghana, Mauritania, Namibia, Nigeria, São Tomé and Príncipe, and Senegal. In 2014, we took part in **OBANGAME EXPRESS** with one *Amazon*-class offshore patrol vessel and one maritime interdiction operation training team, contributing to maritime security in the Gulf of Guinea.

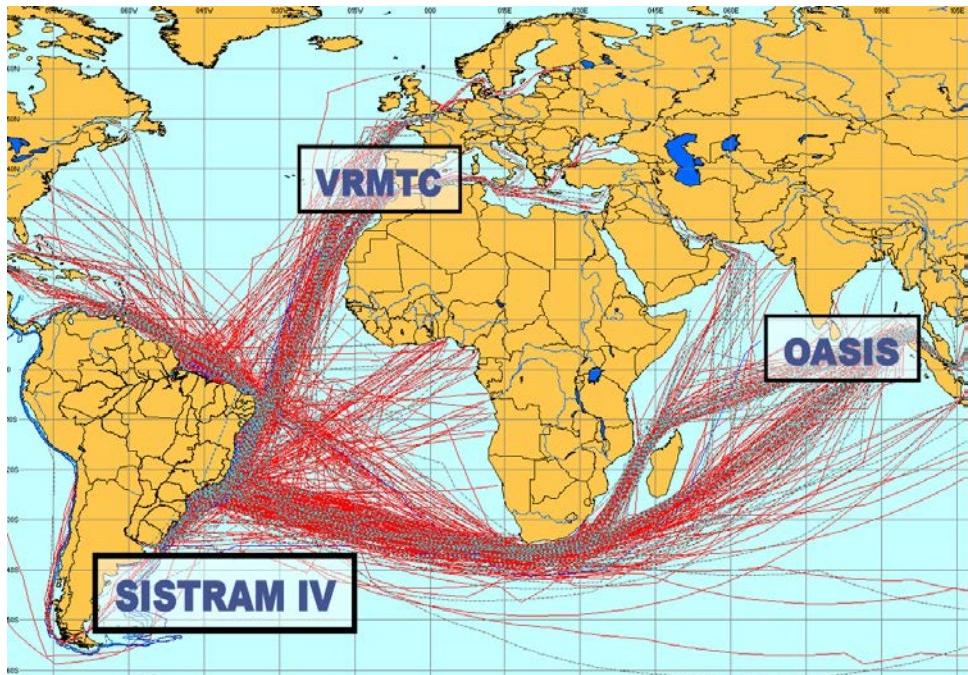
BRAZILIAN NAVY INITIATIVES: EXCHANGING INFORMATION WITH INTERNATIONAL PARTNERS

Effective maritime security is dependent on development of timely, useful, and relevant information and sharing of that information. Therefore, it's important to address the Brazilian Navy's initiatives in exchanging of information with its international partners.

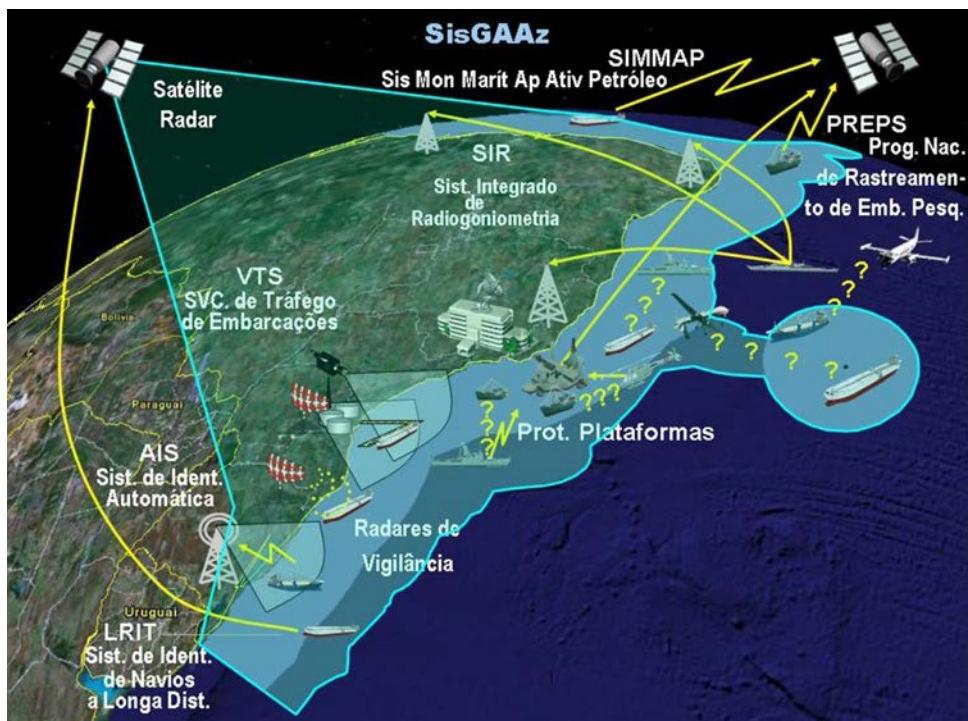
The evolution of our maritime traffic control system, the **SISTRAM** [Maritime Traffic Information System] IV, developed in a Web environment with open architecture and implementation of bilateral and regional agreements, has made such integration possible. We are convinced of the importance of establishing and developing a global network for maritime traffic information sharing.

In 2010, the Brazilian Navy signed an operating agreement to join the **Trans-Regional Maritime Network** (T-RMN) covering the twenty-three countries of the **Virtual Regional Maritime Traffic Centre**, managed by the Italian Navy. Currently, Italy, Singapore, and Brazil compose the T-RMN Technical Leadership Group, exchanging information in real time and integrating new participants. Beginning in 2012, the Argentine, South African, and Peruvian navies were invited. They are contributing to the network, extending coverage in the South Atlantic and South Pacific. In the near term, we expect to include the Chilean Navy. Now, SISTRAM IV is exchanging real-time information with the T-RMN.

To further increase maritime situation awareness, we have been working since 2010 with the United States, allowing the exchange of real-time information between SISTRAM IV and the **Maritime Safety and Security Information System**.



Maritime information sharing between Brazil's SISTRAM IV and Italian-run Virtual Regional Maritime Traffic Centre



Monitoring of Brazil's jurisdictional waters to be done by the Blue Amazon Management System

The South Atlantic Maritime Area Traffic Control Regional Center, developed by the Brazilian Navy to exchange information with the navies of Argentina, Paraguay, and Uruguay, is another successful initiative, enhanced by the Brazilian [Long-Range Identification and Tracking](#) Regional Data Center that counts [ships] with Angola, Namibia, Peru, Senegal, and Uruguay.

We should be implementing, in the near future, the Blue Amazon Management System, allowing increased monitoring and controlling of our jurisdictional waters, which we usually call the "[Blue Amazon](#)." It will also aid our search-and-rescue area of responsibility, directly resulting in increased maritime security in the South Atlantic and efficiency of search and rescue operations.

SUGGESTIONS FOR ESTABLISHING A UNIVERSAL COMMON OPERATING PICTURE

In order to implement a maritime security multinational arrangement, it's essential that the interaction among navies and coast guards complement individual procedures and avoid mutual interference.

In order to improve maritime domain awareness, consider the possibility of helping establish a global information-sharing network, in addition to regional and national ones; this is becoming a reality due to the integration of complex maritime traffic control systems.

The starting point for establishing a universal common operating picture is mutual trust and the willingness of navies and coast guards to share intelligence and operational data, by integrating their systems and establishing formal agreements. Technical difficulties are more easily surpassed when supported by institutional decisions.

The use of maritime information systems with open architecture facilitates interconnection and data exchange. Development of global solutions can start from regional networks that show their operational success, such as T-RMN. Its characteristic of flexibility, as well as its structure based on commercial equipment and Web environment, is a motivator to include more countries.

POINTS TO REMEMBER

A remarkable perception today is the urgent need to enhance global partnership and mutual trust in order to face issues related to maritime security, humanitarian assistance, and disaster response.

To improve our capability to coordinate and respond together, we need to consolidate global maritime domain awareness [in a way] that will provide us the necessary speed to act. This is the basis for us to operate together effectively.

Partnership implementation, however, involves practical steps that must be initiated by a collective effort, getting countries to consolidate concepts of maritime situational awareness, share knowledge, and increase interoperability.

Issues related to maritime security require intricate solutions, demanding political will and joint effort by several actors. It's desirable that more developed navies lead this process, fostering collaboration, building capability, stimulating dialogue, and exchanging experiences with a global perspective.

To develop a concept for information sharing, we need to establish a process for building mutual interest and cooperation and allow promulgation of bilateral, regional, or even global agreements—the object of this panel.

Admiral General Jaime Muñoz-Delgado, Spain:

Thank you very much, Admiral Julio Soares de Moura Neto. The third presentation, “Challenges of Information Sharing,” closely related to the previous one, will be delivered by French admiral Bernard Rogel.

We can easily overcome the technical challenges of transferring information, communications, and protocols, but we must strive to overcome the challenge of information sharing. In other words, if we have the basic equipment, but we do not use it, or do not feed it, it is of no use.

“Confidence” is the key word in this process of sharing information, an issue with deep cultural roots and a tendency to share only if it is necessary. But the old “need to know” is changing toward responsibility to share.

A case in point is the European Union’s [Common Information Sharing Environment](#) (CISE) initiative. It seeks a global picture with participation of all stakeholders having responsibilities in the maritime domain, both civilian and military. It will exchange information among participants, giving the widest possible picture of what is going on at sea. Thus, it enables those participating to make the correct decisions and operate with efficiency and effectiveness.

Admiral Bernard Rogel, Chief of Staff of the French Navy, is a career submarine officer. He has commanded various submarines, to include the SSN *Casabianca* (S603), SSN *Saphir* (S602), and SSBN *Inflexible* (S615). He also served in important positions, to include executive assistant to the Chief of Defense Staff and Deputy Chief of Staff, Operations. His education includes the French Joint Staff College, High National Defense Studies College, and Center for High Military Studies.

Admiral Bernard Rogel, France:

Admirals, ladies and gentlemen, some of you enjoy fishing. Some of you enjoy riding. Some of you enjoy playing golf, like the chief of the Spanish Navy. For me, my passion is to speak about information sharing. So thanks for giving me the opportunity to speak about my hobby.

Be aware because here comes my main topic. A very famous French philosopher said, “A fishnet is nothing but a lot of little holes tied together.” I think that’s the main topic of my brief. We have to share very little [pieces of] information in order to build this fishnet to catch our adversary.

In a world of high instability, threats to our societies are becoming more and more global. In this context, we all share the same concerns.

How can we ensure the security, stability, and prosperity of our countries? Obviously, part of the answer lies at sea, as the oceans support a great deal of our activities and actions. Second, events of these past years—and I can say, in particular, operations against piracy in the Gulf of Aden—these events demonstrate clearly that cooperation between nations plays a major role in answering these threats.

FOUR QUESTIONS

To deal with the subject, I will simply ask four simple questions and try to answer them with some very practical examples of how information sharing can lead to successful action at sea. These questions are

- Why do we share information?
- With whom do we share?
- What do we share?
- How do we share?

Why Do We Share Information? Information sharing is central in operational cooperation. Take a look at maritime spaces in the world today. Oceans are a space of prosperity, with huge resources that need to be regulated, defended, and protected: fish, oil, minerals, maritime energies, biotechnologies.

The high seas are a space of freedom where international exchanges take place and are kept at low cost. Today, 90 percent of our commerce goes by sea, as well as 95 percent of our communication. As a space of freedom, the seas are also used by criminal groups and organizations for their activities, illegal fishing, piracy, and trafficking of drugs, weapons, and immigrants.

This creates a need to control our maritime spaces. This can be a real challenge when the spaces are vast and when we have limited means.

Last point: oceans remain a present danger, where the loss of life and goods continues to happen daily. Regulate, defend, protect, maintain free access, control, assist—these are the missions that we need to conduct every day at sea.

Some of these missions can be performed alone, but we are all confronted with the vastness of maritime spaces and the limits of our own resources. I have been trying to convince my minister that he should give me free access to his credit so I could have enough ships and planes to do the job alone. He doesn't seem to be open to that opportunity, though. Most of the time, nothing can be done without at least some cooperation.

We are also confronted by the limit of our knowledge regarding what is going on in the space. So sharing of information is what comes to mind when it comes to improving this knowledge.

We have all come to this conclusion. We need to share information to get a better understanding of the situation, to optimize the use of our ships and aircraft at sea, and to reduce risk.

With Whom Do We Share? There are many answers to this question. It depends on what goal you want to achieve and whom you want to include in your solutions.

At sea, sharing of information is easy when the stakes are low, or when lives can be preserved with the information you deliver. We are used to sharing openly and with everyday data searches: weather forecasts, navigation warnings, distress calls, or AIS [Automatic Identification System] signals.

It can get more challenging when information is considered sensitive. In this case, trust is a central question. In some cases, the number and diversity of actors taking part in the exchanges that you wish to develop can also be a challenge. There's a need to speak the same language. It is what is called interoperability.

I will use real-life examples to demonstrate the difficulties but also the expected benefits of information sharing. I will consider the spectrum of operations, from

security to defense. Sharing appears simpler with security operations, while becoming more complex with defense operations.

My first case describes an event that took place about a year ago in the Mediterranean. The French offshore patrol vessel *L'Adroit* (P725) was on a European surveying mission, searching for possible migrant smugglers. A merchant ship saw a boat loaded with passengers off North Africa. Contact was reported to the international coordination center in charge of immigration surveillance in Madrid, which, in turn, informed the Algerian authorities.

L'Adroit closed the contact and looked at the two boats in need of rescue. It established communication with an Algerian patrol boat dispatched for the occasion and guided it to the boats, offering support for a possible search and rescue operation. Thirty-two people were rescued.

This saving of life at sea was made possible for two reasons. First, there are existing frameworks and systems for cooperation and exchange of information. In this case, the [European Agency for the Management of Operational Cooperation at the External Borders, or FRONTEX](#), is an information exchange to [Eurosur](#). Eurosur is a secure network between national coordination centers, allowing the sharing of operational information for protecting the lives of migrants at sea. It is financed by the European Union. This is a very advanced stage of cooperation and information sharing. It is also a good demonstration of what can be achieved when there is a common will to fight a problem.

The second reason why this intervention was possible is that Europeans have been working at creating an atmosphere of open and trustful cooperation with their partners on the southern shore of the Mediterranean. The resulting procedures allowed very smooth coordination.

Next case: in July 2013 a fishing vessel flying the flag of a Southeast Asian nation was reported missing by its owner. Following a request from the [Joint Rescue Coordination Center, Honolulu](#), the Maritime Rescue Coordination Center in French Polynesia ordered one of our navy surveillance aircraft to investigate the last known working position of the vessel.

After four hours of flight, the fishing vessel was found in an area located one thousand nautical miles from Tahiti. Information was transferred to the flag nation, which led to a coast guard cutter boarding the fishing boat. This led to the arrest of each crew member on suspicion of murder of the captain. The search operation took place 4,500 nautical miles away from the vessel's home port.

This example demonstrates that, in some cases, operations simply cannot occur without some exchange of information and cooperation. The flag nation would probably never have found the fishing boat it was searching for without the support of other nations present in the area. It would probably have never sent the coast guard ship without knowing, beforehand, where the vessel was.

Once again, this information was made possible thanks to the existence of the network of national [maritime rescue coordination centers]. There was trust between the nations involved.

Also, we were ready to dedicate our men to supporting operations conducted by a partner nation. That was not only because it is France's responsibility as a supervisor of the search and rescue regime, but also because we know that one day we will

be looking for a French vessel and we can count on our partner nations to help us. Trust allows us to share costs.

In another example, navies for numerous countries have been cooperating in the region of the Horn of Africa for several years against piracy. As you know, the results are very encouraging. From more than two hundred acts of piracy in the Gulf of Aden in 2011, we were down to fifteen last year.

Here again one of the main reasons for the success is information sharing. In the Gulf of Aden, progress has been made through cooperation. We are now able to collect and disseminate information very quickly to all units involved. We are also able to deconflict operations and avoid redundancy.

To do this, we had to create solutions. There was no existing common communication network. The solutions that are now operational allow us to exchange critical information with shore headquarters and naval units from EU, NATO, the [Combined Maritime Forces](#), and all countries involved in counterpiracy.

The case I will describe now is about a counter-drug [operation]. This is not exactly a war operation, but it is very close. In counter-drug operations, as in war, we are confronted by adversaries that, with money, can buy all they need: planes, boats, weapons. They understand our trends and weaknesses. With unlimited imagination, they can invent new courses of action.

One of the biggest catches of pure cocaine was made by the French Navy in past months. Based on intelligence provided by the U.S. Drug Enforcement Agency, U.S. Joint Interagency Task Force South informed French authorities of a cargo ship with a Venezuelan flag suspected of having cocaine aboard.

After having received authorization from the Venezuelan authorities, frigate *Germinal* (F735) boarded the ship and found 3.6 tons of pure cocaine inside the compartments of the ship. Venezuela sent a patrol vessel to take charge of the cargo, crew, and the drugs, which were destroyed. The sailors are now in jail.

[U.S. Southern Command](#) is currently developing a system called CSII, [Cooperative Situational Information Integration](#), to be in service before the end of this year. This system will allow sharing of operational information concerning activities of the narco-traffickers in the Caribbean. It will integrate sensors, such as air and surface radars, and will be available to regional partners willing to fight these activities. France will take part in this initiative.

What Do We Share? In high-intensity operations, cost and risk are higher, because you share intelligence more than information. When you fight a war together, with the same objectives, the need to share becomes stronger. It is interesting to observe how that tends to happen in such situations. In particular, the will to avoid collateral damage in combat operations increases the demand for verified intelligence.

There is a need to be 100 percent sure of the information that you are handed. This is not always easy to achieve, including sometimes with our closest allies and friends. But great progress is being made.

I have identified the following challenges in this sharing. In targeting, you need to know everything that the information providers know, including sources. This is perhaps more difficult. Intelligence has to be joint—not just land, air, or maritime. Some sources are not military but come from government agencies. These add another layer of complexity, as these organizations are not necessarily open to sharing in a multinational environment.

Interoperability between classification levels from different nations can be incredibly complex. In Libya in 2011, allied nations carried out a seven-month campaign. The sharing of information and of intelligence had to be organized between shore headquarters, intelligence agencies, ship-based commanders, and maritime units, NATO and non-NATO.

New ways had to be found to disseminate the relevant data to different participants. There were technical obstacles that were eventually overcome. Classification levels were an issue. Solutions were found, taking them into account. The result was success for the coalition of countries from several continents, certainly based on NATO architecture, but not limited to a Western approach. At the same time, commercial traffic into the Mediterranean was never interrupted.

How Do We Share? I have provided answers to my first three questions: why, with whom, and what. I now answer the fourth question: how?

We are probably at a turning point in information sharing. Several great trends make me say this. First, in the world of today, borders tend to disappear. We have made a choice to open geographical borders to allow free exchanges of goods, money, and persons.

Criminal organizations understand the full benefits they could get from this. Criminals and extremists known to us tend to dissolve borders between their activities. For instance, it is believed that 20 percent of the funding for terrorist groups fighting in Africa comes from the drugs transiting from South America to Europe through the African continent. This is only one example.

Second, we need to rationalize the use of our assets. Budgets are more constrained. Cost of equipment tends to increase. When interests meet, it makes greater sense to find efficient ways to cooperate and share the burden.

Third point: it is now obvious that future solutions for defense and security issues are not solely military. We need to develop approaches that include actors from the other fields, not only to win war or battles, but to build peace. They include diplomats, law enforcement agencies, organizations involved in development, private companies, etc. This requires being able to share with all these actors.

Last point: technology and innovation provide us with new solutions for information sharing, in a timely manner, at the level of confidentiality that we desire, and with access to powerful tools for processing this information that make sharing effortless. As a matter of fact, it now requires more effort to keep information for yourself and your organization than to let it out in the open.

The main conclusion is that we are shifting from “need to know” to a “need to share.”

Information sharing is perceived as something more and more natural, which can be a force multiplier in operations that we undertake. Of course, everything cannot be shared, for reasons that you will easily understand.

Also, there are conditions for sharing. Sharing cannot be without limits. These conditions are simply a question of good sense.

First, as I mentioned, trust remains a key factor for information sharing. Releasing military information or intelligence is a way of opening yourself to others. In the case of intelligence, it also bears a risk, which can be human, financial, or political. In a way, sharing makes you more vulnerable. This is why it is important to have someone on the other end who you can be sure will not exploit these

vulnerabilities. So, let's keep building trust through mutual knowledge and clarity of our intentions.

Concerning legal aspects, most of our national rules for disclosing protected information are based on “need to know.” This makes sense when speaking of military information and intelligence. It can become an obstacle when there is a need to open this information to a partner. But there are solutions, and when there is a will, there is a way.

In sharing, you need to remember that information has a cost. It takes resources to gather information and to process intelligence. Behind one piece of information, there are men and women, research and development, operating systems, and organization.

This means that when sharing, the provider of information or intelligence will generally be looking for a return on investment, through benefits. These benefits can be direct or indirect, material or immaterial. It's always a give-and-take.

Last point—in maritime operations, when you provide me with information, with intelligence, it will generally be for an operational purpose. If this information makes sense with regard to the common objectives we are pursuing, we may be sending out a ship, aircraft, or submarine to save a life, catch a bad guy, or interdict a ship. This is time and money. I need to make sure that I make the best use of assets. This requires that information be exploitable. What I mean by that is if I don't want my asset to waste its time at sea, I need this information to be verified, accurate, and updated. Otherwise, next time I may be thinking twice before moving.

THE BETTER WE UNDERSTAND, THE CLOSER WE GET

As a conclusion, sharing information appears to be a way to enhance future combined operations. We need to remember, though, that each actor has its own way of seeing the world. The better we manage to understand this vision, the closer we will get to a just and balanced way of sharing this information.

Finally, I want to identify the famous French philosopher, who said that “a fishnet is nothing but a lot of little holes tied together.” It is my mother-in-law. Thank you very much.

Admiral General Jaime Muñoz-Delgado, Spain:

Thank you very much, Admiral Rogel. The fourth and final presentation will be delivered by Admiral Matthieu Borsboom of the Royal Netherlands Navy. I would like to congratulate him on completion of a highly distinguished tour of duty as Commander of the Royal Netherlands Navy, which will end in a few days. He will discuss counterpiracy operations in a coalition environment.

Focus for a moment on the pirate activities in the Indian Ocean and the things that were carried out by NATO in **OPERATION OCEAN SHIELD**, the European Union in **OPERATION ATALANTA**, and the U.S.-led multinational coalition, apart from other naval units from Japan, China, and Russia. These endeavors can be interpreted as the “coalition of coalitions” where they shared awareness and, acting in concert, played a very significant integration role.

We are all, more or less, pulling in the same direction, based on concurring interests like freedom of navigation in the Indian Ocean, for example. To win at these

endeavors, those naval activities are complemented by civilian actions, intended to strengthen the maritime capabilities of regional nations, with a comprehensive approach to solve the problem of piracy. The case in point is the European Union's mission [EUCAP Nestor](#).

Vice Admiral Matthieu Borsboom is Commander of Royal Netherlands Navy. He's a native of The Hague, the Netherlands. He's a surface warfare officer who received his commission in 1981. Vice Admiral Borsboom has held positions as the director of the Centre for Automation of Mission-Critical Systems and Deputy Chief of Staff for Stability in International Security Assistance Force Headquarters in Kabul. At sea, Vice Admiral Borsboom has commanded M-class and S-class frigates.

Vice Admiral Matthieu Borsboom, The Netherlands:

Thank you very much. Great thanks for this fantastic venue hosted by the U.S. Navy, Jonathan Greenert. It's a pleasure to be back. It's also good to notice your leadership and the leadership of the U.S. Navy in many maritime aspects.

And the challenges are there, but the first challenge is for you, and that is the first question: what is the oldest profession in the world? It starts with a "P," and it's piracy.

THAT WAS THEN

My navy was founded in 1488—a few years ago. It was founded because piracy was the issue. It was formed as a standing organization to fight piracy. Of course, this was done, not globally but it was done regionally. That was necessary because piracy, at the time was individuals, groups, and it was also state. And they were pretty aggressive. They even showed up along the shores of the UK, for example, ransacking small cities, before ransacking ships.

At that time, piracy was also a state event. The Dutch were very good at it, as a state. That's why we used piracy against France, Spain, and some other nations. That was then and, in those times, we had to do it, because we fought an eighty-year war with Spain. The effect, in that time, was as devastating as it is today. It was affecting the willingness of sailors to go to sea. It was affecting investors to put money into ships. And it was also disrupting trade. It had a strategic impact. But that was then.

NOW

Now, after 526 years, we're still fighting piracy. That's interesting to note, especially since the title [of this presentation] is "How to Enhance Coalition Operations to Counter Piracy."

What we see nowadays is a few changes. It's still global. It's still aggressive. We find it, as was discussed, in the Gulf of Guinea, the west side of the Indian Ocean, and the Strait of Malacca, where it first arose twenty years ago. Then later on in Somalia and some of it [is] in South America. What we no longer see is that states are using piracy as an instrument. So, that's an advance. That's good.

We see something else, which was not mentioned too much. We see hooking up between piracy, criminal organizations, and terrorist organizations. It's not a one-on-one relationship, but it is there. That makes it even more complex and even more necessary to deal with it.

If we look at our success in fighting piracy in 2014, you can have a mixed opinion about it. We are pretty successful as a coalition. Some of you are fighting it in the Strait of Malacca, being successful. Although ten years ago, when you thought you had solved it, attention levels dropped. Then it came back. Good lesson learned—if you lower your attention, it will be back. And that's what happens.

In the west Indian Ocean, Gulf of Aden, what we see is a huge, collective effort by us all. But we know that it's only fighting the symptoms. It's not a comprehensive approach. And we fight there with many, very expensive assets—air, underwater, above water—but these assets were never designed to do so. It raises the question, are we doing it efficiently? Do we need different assets to do that? Are we not fighting with frigates a very simple enemy, so to speak?

Then [we have] the discussion, which was already raised, concerning the private security companies. How much of it can we leave to others to do?

If we add that up, specifically for the Gulf of Aden, we can say that with the collective effort, we were successful. So, the first-order effect is positive. But the question is, is it sustainable the way we are doing it, [without] taking out the root causes?

THE SECOND-ORDER EFFECT: A SMALL REVOLUTION AT SEA

I would like to discuss the second-order effect. The second-order effect will also tell you something about efficiency. If you only calculate the efficiency—how much it costs and how much we are able to fight the pirates—it's pretty expensive. But are we also factoring into the equation the second-order effects?

I will go through the second-order effects because I think they're extremely positive. What happened over the last four or five years is a small revolution at sea because of these second-order effects.

A Lot of Situational Awareness Collectively Gained. If you don't go into areas, you don't know. But we went into areas we never had been [in]. We established an understanding of the patterns of life, which is very important: who is the local fisher, what are the dhows doing, and how better to understand that.

New Partnerships Created. Five years ago, we would not have thought that we would collaborate with Iran, or work closely together with Russia, or land Chinese helicopters on our ships, or have Dutch helicopters land on Russian ships. I would never have expected us to have a captain, the chief of staff in a Korean one-star battle staff, running the Combined Maritime Forces. It would be unthinkable, but that's what happened. So, new partnerships.

New Relationships with Adjacent and Coastal Countries Created. This is very important. It's not only at sea, but also relationships within ports.

Improved Cooperation between Multinational Institutions. The way NATO, the EU, Combined Maritime Forces, and all other partners started to work together is a fine example. There is also the example in the Strait of Malacca. That is amazingly close cooperation.

Increased Interoperability. We have seen it at the unit level—the Combined Maritime Forces is a great example—and also in EU forces. It's also at subunit levels, where sometimes, for example, boarding elements of one nation were taken aboard another nation's ships, like we did with Maltese boarding teams on Dutch ships. Next year we will take a Swedish one-star's battle staff on one of our LPDs

[amphibious transport dock ships] to command OPERATION ATALANTA. These were things that did not happen before five years ago.

Crossover. I talked a little bit about that during the [Regional Seapower Symposium in Venice](#). “Crossover” means we are using high-end capabilities, like LPDs, submarines, very expensive frigates, but using them in low-end-type operations. We adjusted these capabilities—like using an LPD and landing craft to be forward looking outposts along a coastline of Somalia, for which they were never intended. Rather, they were intended to shuttle marines up and down.

This crossover effect helped us explore new tactics and, at the same time, deliver readiness and experience to many of our sailors. That was an important plus, as was using the sea basing concept.

Innovation. This was very well discussed by Admiral Rogel, the information sharing. It was the innovation in C4I [command, control, communications, computers, and intelligence].

Who could imagine, a few years ago, that a self-generating command and control mechanism like [SHADE](#) [Shared Awareness and Deconfliction] would really work? I think forty nations have connected. There is no memorandum of understanding. It’s a sort of self-synchronizing system, which is working because it’s inclusive. It’s interesting to think about it. [The Mercury Network](#), which is connected to that, is sharing that information to make everybody able to do the job.

There is also the example of the [Eyes in the Sky \(EiS\) Initiative](#) in the Strait of Malacca, where you come together and share that sort of information. So there was innovation in C4I just deriving from that coalition effort.

Working Interagency. This is not just navies and coast guards working together. This is a step toward comprehensiveness. As a Dutch example, because of our efforts in the Gulf of Aden, we established a very close, 24/7, relationship with the chief prosecutor in the Ministry of Justice. We were able to have a constant dialogue when we were apprehending pirates. We even had courts at sea. Civil lawyers flew into theater and then were involved in courts. The interagency part and connectivity with the rule of law were very important. It’s a derivative, a second-order effect, of what we have been doing collectively in the coalition.

When we judge the first-order effects of counterpiracy, either in the Strait of Malacca or the Gulf of Aden, we also have to include in that equation the second-order effects.

THE NEXT STEP: HOW TO ENHANCE COALITION OPERATIONS IN COUNTERPIRACY EFFORTS

Is it then done? No. We have to think about the next step, which is based on three assumptions:

- That *mare liberum* [freedom of the seas] will continue, although under pressure
- That pirates will remain, understanding that their business model is pretty attractive
- That the volume of sea trade and the volume of oceans—and the Arctic is opening up—are so great that no single nation can cope with those.

So with these three assumptions, what to do next? How to enhance coalition operations?

First, based on second-order effects, keep the existing frameworks. There's a very simple Dutch saying: "Don't throw away your old shoes before you've bought new ones." The existing frameworks have been proven to be partly effective.

Next, counterpiracy has to shift away from fighting symptoms to fighting the root causes. That can only be done in a comprehensive manner. To do that in any case, you have to be there. If you're not there, you don't know. That is what I call upstream prevention. You have to be in situ. We have seen initiatives like the African Partnership Station. It is a force deployment—not to be aggressive, just to be there, to assist, to support, to know what's happening, in order to prevent conflict.

We have to widen the mandate. It's pretty ridiculous that we have complete task groups working on a mandate only to fight piracy. Then in another part of the world, in my case, for example, the Caribbean, we have the mandate to counter drugs.

We know that when at sea, you will stumble over everything: pirates, weapons smuggling, drug smuggling, human smuggling, and terrorists. We have to think about how we can write the mandate to take that on as a whole. You can call it illicit trafficking. I would like to add illegal fishing, which is a particular point of interest for our African friends.

Then the question is who is going to do this? It's simple. It's international law. If it's a coastal state, the coastal state takes care of it. But we know that that is one of the issues. If it's the coastal state's responsibility, we should, in a comprehensive way, assist those states who cannot effect that sort of role. So we have to do security sector reform. Initiatives are there already. The question is, is it coherent?

We know many of the choke points are not in coastal waters. They could be in EEZs [exclusive economic zones]. They could even be outside EEZs. So we have the question, who is the ocean guard in those areas? Think about that, the ocean guard. Are we the ocean guard? Is it an extended coast guard? Is there another arrangement? Are we going to reel in private security companies to get that arranged? I think that's an important question to answer.

This can only maybe be addressed by a global, centralized strategy on maritime security. It's nonexistent. The International Maritime Organization has ideas about it. It's interesting to see that the European Union, three months ago, [launched the maritime strategy](#). We have seen [NATO reiterating its maritime strategy](#) and we know that, last year, the [African Union promulgated a maritime strategy](#).

In all these strategies, there's one common sort of approach, which is the regional approach. I don't see, in the near future, there will be a global centralized strategy.

The regional approach may be the answer. Who's going to do it in the regional approach? We all know the words "coalition of the willing." In this approach, you will see the coalition of the ones with the common interests. It's not all altruism. It's also national and collective interests.

Yesterday, you had a meeting on the Gulf of Guinea with many nations assembled. In those instances, you need one or two front-runners to get the region organized, together. Tomorrow, we have breakout sessions dealing with regions. It will be interesting to see who identifies, or couples with partners, as the front-runner, to address a regional approach.

After a few years in the navy and looking into different schemes, one of the schemes I've just mentioned already exists. You heard about it. I hope you know what I mean. It's not perfect. It's absolutely not complete, because it's not comprehensive enough.

What I learned fifteen years ago in the Caribbean and from joining the Joint Interagency Task Force (where we will find coast guards and navies of many nations; where we will find the wider mandate—it started with counterdrugs, but it's now wider: it's illicit trafficking—where we see different assets connected to it; where we see that the rule of law within the existing legislation was transformed on the basis of our collaborative efforts—that was enabled by the Treaty of San José—where we changed the legal framework, where we, for example, were able to do hot pursuits in territorial waters of those nation-states who signed up)—this is an example where you can be very pragmatic. You, with the breadth of challenges, can cope with it. What is missing is the comprehensiveness. You have to go to the root causes. This can only be done with an outreach to other agencies. That's the title of the whole conference, common maritime challenges, which need global solutions.

I said a little bit about regions. But the solutions have to be comprehensive and it's not coming automatically. That's clear after these years.

So who knows the maritime environment the best? That's us. That's you. The question is who should bring comprehensiveness into the equation? I think that is a task we have to undertake, and that's why I think we have to take the steering wheel. Thank you very much.

Admiral General Jaime Muñoz-Delgado, Spain:

Thank you very much, Admiral Borsboom. Let me give a brief summary of the panel.

The panel focused on communications, global maritime domain awareness, and information exchange, connected with the concepts of interoperability and confidence. The topics centered on a very specific type of operation, counterpiracy. Some thoughts related to enhancing global coalitions were also brought up. For example, would it be feasible to set up a global naval coalition to fight piracy?

Also, interoperability, fundamental to the performance of a coalition, may somehow be jeopardized by different technological levels of participants. But it does not just come down to communications and information exchange. There is a possibility of enhancing a common doctrine and complementary operational capabilities. Coalition cohesion is a key element for success.

Without further comments, I have the pleasure of giving the floor to the audience.

DISCUSSION

Vice Admiral Ryszard Demczuk, Poland:

This is an honor to be here among the top leaders of navies around the world. Thank you very much to the Chief of Naval Operations of the U.S. Navy for inviting us and organizing this great event.

My question goes to Vice Admiral Matthieu Borsboom, Commander of the Royal Netherlands Navy. My question is regarding counterpiracy. Someone said that fighting piracy is like fighting mosquitoes: if you would like to be efficient, don't try to kill them one by one. You have to go into marshland.

There are different approaches to chasing pirates around across gulfs, seas, and oceans. Perhaps there are different approaches to international involvement and coalition. Also, different approaches include controlling harbors, piers, and littoral

traffic. Who is controlling the ground around harbors? This is controlling piracy. Of course, that is very difficult to achieve when we are observing collapsed countries and the situation is like a disaster. What is your opinion regarding those approaches to counterpiracy?

Vice Admiral Matthieu Borsboom, The Netherlands:

Thank you for that excellent question. That was the brain-breaker last year. “A comprehensive [approach]” is the answer, but it’s almost hollow in itself.

The European Union was pretty much equipped to take this on. Of the pillars of the European Union, development would be the answer. But if you talk of the situation of Somalia, it’s extremely difficult. You will not have success in a very short time. So you still have to bash the mosquitoes if you don’t want to be bitten.

You can be a little bit clever—go up to shore, not on the shore, but close to shore, and that’s what we did together. Then, with the new mandate [Security Council Resolution 1857], there is also the possibility to take on piracy camps on land. That was also executed from the air, once.

But it’s still suppressing and taking on the symptoms. There needs to be development ashore.

This is not a navy responsibility. It’s a collective responsibility. That’s why we have to be inclusive, and get other parts of governments into the equation. We saw the first steps in that respect, not only for the Indian Ocean. That is the solution for other areas.

Admiral Bernard Rogel, France:

Admiral Borsboom has raised the most important thing. Counterpiracy is an old story. It began way before the Strait of Malacca.

We had forgotten this legal dimension. This is the very concern we have today. In the Indian Ocean, we found solutions and this we did hand in hand. It is the military that brought the first element to find a solution, military partners with all branches, but also shipping companies. Let us not forget them. They have also had a significant impact in counterpiracy. But solutions were first launched by the military, and then were sort of packaged by diplomats. The determination and willingness of the military made all this possible.

I agree with Admiral Borsboom. It is our responsibility to carry out missions at sea. We are responsible for that, we are paid to do so, and we do a good job.

Let us not forget that everything also comes from the land. As long as there are problems on land, piracy will flare up here and there. We see it in the Strait of Malacca. As soon as pressure leaves certain zones, then pirates come back. In the Indian Ocean, logistical warehouses were also hit. That was definitely something we had to focus on.

The main difficulty in fighting piracy is that we do not have clearly defined legal frameworks. In France, any reference to piracy had disappeared from the laws. So we had to revoke bills and adopt laws in order to pursue pirates. Each nation needs to have the specific legal framework necessary to be able to go in hot pursuit of any pirate ship.

For a merchant ship hijacked by pirates, or to prevent it from being hijacked, we have an intractable problem. The flag borne is not that of the shipping company, the crew, or the shipper. What can I say? It makes everything that much more complex.

What is even more frustrating is that in the first fights against pirates, we captured them. We knew they were pirates. We had evidence they were pirates. But nobody wanted to bring them before any courts.

And thank you to Seychelles, Kenya, the EU, and other countries. We found solutions to the legal problem, to some extent.

But I must admit that it was frustrating to apprehend pirates, knowing that they were pirates, having evidence and proof that they were pirates, and then having to free them on a Somali beach.

Captain Issah Yakubu, Ghana:

Thank you very much, Admirals, for your excellent presentations.

The themes throughout this panel discussion have been information sharing, maritime domain awareness, and the like. I want to focus on the Gulf of Guinea and the situation that we have there now.

One of the greatest challenges in the Gulf of Guinea has to do with maritime domain awareness there. It's not the best, although we are doing our best. We've had a lot of assistance, particularly from the U.S. Navy. We have the U.S. naval attaché here.

The greatest maritime security operational successes we have had have been through information sharing with our partners. We still have a big challenge with our maritime domain awareness. We know that our allies and partners have a lot more than they are giving us.

We want more pledges of information. The information that we get now, mostly, is for reactive purposes. When there is a situation, we are called and informed. Then we go out and respond. We want to be more proactive, on a daily basis, at developing maritime domain awareness with our partners. As French navy chief Admiral Rogel said, we should move from "need to know" to "need to share."

My chief recalled at the Gulf of Guinea symposium that even though the actions may be localized, the effects are global. Whatever successes we chart are in the interests of the global community.

We need more commitment to developing maritime domain awareness and developing a global navy through information sharing.

Admiral Bernard Rogel, France:

You're absolutely right, Captain. We are at the crux of the matter here.

France maintains a mission in the Gulf of Guinea called [Corymbe](#). We have an agreement with our African partners to make that mission an operational tool, but also a sort of floating academy, or college. It is intended to take into account all the problems that you mentioned, including access of African navies to high seas and their own exclusive economic zones.

You highlighted this very well. There are piracy issues that have to be solved. We need to help you in this matter. I believe that the [Yaoundé summit](#) was particularly important and fruitful. There has been an awareness-raising effort. People are aware. The governments of Africa know that they need to avail themselves of the means to combat trafficking or piracy. You are on the right path.

There is an entire interministerial thought process under way. And our struggle to fight against piracy or other problems is something that is interministerial in my country. Now we have to go to the regional level, so perhaps an operational center for the African navies. I think we're on the right path.

We are well aware that we must help you so that you may solve your own problems. We often talk about the Gulf of Guinea as being the greatest region of piracy. Unfortunately, the Gulf of Guinea has become a laboratory of all the problems that you could possibly encounter at sea—drug trafficking; illegal, unregulated, and unreported fishing; and piracy. It is in the very interest of each and every person that we find solutions, together, and that we be present next to you.

I am extremely in favor of a dialogue with all African countries. All navy chiefs of staff of the Gulf of Guinea countries can testify that we need to go further. We need to do more. This is a question that we raised with the admiral from Cameroon: how can we help information sharing and make information more available?

It would be a mistake to limit the issues of the Gulf of Guinea to only piracy or counterpiracy. There are a number of other problems that have to be solved. There, we really need to work.

What also makes me optimistic is that I see the [Economic Community of West African States](#) and the [Economic Community of Central African States](#) are talking to one another. They are having a dialogue. True, we need a regional approach. We also need methods of coordination and rights of hot pursuit among one another; failing that, the pirates, at one point in time, will go into other waters and disappear. Then it gets even more complicated.

I hear your message, loud and clear. Rest assured, we are working hard on this, and we are going to continue to do so with all our partners in the region. I'm not going to name all partners, but particularly Spain, Portugal, the Netherlands, United States, and UK—we're striving to do a better job. I'm not going to commit, of course, on behalf of other navies.

Lieutenant Commander Cyrille Atonfack, Cameroon:

My first question is directed to Admiral Rogel. My second question is for all panel members.

Admiral Rogel talked about law enforcement in counterpiracy and he talked about jurisdictions. He also talked about how France had worked with Kenya and Seychelles.

If I'm not mistaken, Kenya was willing to pursue the pirates and put them before the courts in Mombasa. The families of the pirates went to Mombasa with ransom money. The ransom money changed a number of situations.

So what has been done regarding these countries, such as Kenya and Seychelles, that were willing to judge pirates that they did not capture, but were willing to judge them on their own territories? Ultimately, that triggered a number of problems rather than more solutions.

The second question is for all the panel. Is piracy worse than drug trafficking? Admiral Rogel said, a couple of times, in order to board a ship, whether compliant or not, they had to ask for authorization of the ship bearing the flag of the state, and this is stipulated by [article 17 of the Vienna Convention](#). In the case of piracy,

universal competency comes into play, in terms of judgment, or in terms of law enforcement.

Drug trafficking seems a scourge worse than piracy for our societies. Why is the competence, the jurisdiction, limited [for fighting drug trafficking]? Why do we need the agreement of the country bearing the flag on the ship? What about crime networks? Drug trafficking and crime networks seem much worse than piracy.

Admiral Bernard Rogel, France:

I'll respond to both questions. The first one, unfortunately, I do not have all the items that would allow me to give you an appropriate response. Agreements were signed between the EU and host countries that were willing to judge the pirates in their own countries. I'm not sure what the agreements were among those countries. But I agree. I don't think we did enough to foresee eventual problems, but I'm not going to get into those details. If there is a representative of Kenya here, he could give us his opinion. That would be interesting.

This is an excellent question that you're raising, Commander. We are really in the nitty-gritty of the global approach, the comprehensive approach. You can't just have regalian missions [missions of sovereignty] at sea. All of this has to be packaged with other things to make it possible to have a process ending with judging pirates. The families that come to a city with more money than the local population and paying ransom money are a concern. A number of discussions have taken place with Seychelles on the topic.

We should also talk about the prison capabilities of those countries willing to judge pirates. Some jails might not be available and some jails might be too small. Prisons might not be adequate in counterpiracy situations to incarcerate pirates.

The global approach is what is most important. And problems have to be examined end to end. You cannot begin in the middle and reach the end, as it were. You can't solve the problem that way.

What you're saying is absolutely true and it means that the effect you obtain—well, after all, in the end, ultimately, the pirates were sent to jail—wasn't satisfactory enough: the end result wasn't satisfactory enough.

Article 17 requires us to consult with the flag state. I must recognize that the French Navy seized in less than two years more than thirty tons of drugs at sea. We have never had a refusal from any flag state whatever—never. Well, it takes a long time, sometimes, to get it [permission from the flag state], and we are—I was saying just now that we are building a military operation; it's certain that when they have go-fast boats, when they have ships that are somewhat perfected, that [inaudible] that we have a very well developed military process and we are asked to intervene, and this would be a very lengthy process, and we will adapt to the desires and the opinions of the flag state.

We cannot say that there is a double standard for drug trafficking. We should all work together—and this is within the framework of Montego Bay—to fight this illegal trafficking that will be ever increasing. As was said, pirates and traffickers understand the good aspects of freedom of the seas. We have to find solutions together.

Maritime jurisdiction is very simple. All sea personnel know about this. Today, we have it with article 17. It doesn't work that bad. We should go on working with it.

Admiral Tan Sri Abdul Aziz Jaafar, Malaysia:

Piracy and drug trafficking are both equally serious. Piracy stops shipping and stops peace and stability at sea. Drug trafficking stops society. We shall handle both at equally important levels.

Fleet Admiral Julio Soares de Moura Neto, Brazil:

In a certain way, I agree with what Admiral Aziz said. These are transnational crimes, and they have a negative effect on society.

In the Gulf of Guinea, if we were not able to transport the oil available in Nigeria, there is a negative effect on all countries. Piracy is hurting society, even if society is not fully aware of that. When we try to import oil that is going to help a country to keep industry functioning, and this country is unable to receive the oil, society is negatively affected.

Both [piracy and illicit trafficking] have to be fought together, with all the hurdles and difficulties we have been facing.

Vice Admiral Matthieu Borsboom, The Netherlands:

What we are dealing with is international criminal organizations. Their effect is hugely underestimated. They work as multinational organizations. They have a portfolio. Their portfolio management has performed pretty well.

They most probably are in all these types of illicit actions and sometimes are connected with terrorist organizations. Terrorist organizations don't mind where the money comes and likewise with criminal organizations. They sometimes invest in piracy. Then they invest in weapon smuggling, or do it at the same time. As we have seen, sometimes pirates on their way north conducted weapon smuggling and, on their way south, they did piracy.

To [rank] them on [a scale] is not important.

We have to fight these international criminal organizations and we are not doing enough because of all kinds of reasons, one being legislation. To pick up on Admiral Rogel's point, we had the same problem in the Caribbean until we, as navies and coast guards, showed the political level specific cases where we could not act because of legislation. We did that and we were able to act. It took us ten years—it's too long, I know—to get the Treaty of San José, to be able to go in a hot pursuit in somebody else's territorial waters with certain flag states.

We should not give up because it's difficult. We have put more effort into it and understand the complexities.

Rear Admiral Lars Saunes, Norway:

Thank you, Admirals, for such good points with regard to global maritime challenges.

My question is what's the next step. Admiral Borsboom talked about a comprehensive approach. You have the [Law of the Sea Convention](#). You have the International Maritime Organization governing the good order at sea.

But the global order is based on states and state legislation. There is a small maritime coordination center in Lisbon that puts together police, customs, navies, and coast guards and, based on each nation's legislation, they share information about potential drug dealers, pirates, illegal and unregistered fisheries, and more. Each nation can then go with a legal charge against any of the incidents.

This is a regional initiative, but the challenge is global. My question is to Admiral Borsboom, and perhaps Admiral Aziz. Is it possible to extend these regional centers and connect them in the next step of cooperation? We are cooperating in the Gulf of Aden, Mediterranean, and Malacca Strait. To be really efficient, though, we need to have a comprehensive approach.

Vice Admiral Matthieu Borsboom, The Netherlands:

There's no central strategy yet. Maybe it will come. It's great, if it's there. Then it needs an adjusted international maritime legal framework. That will take a long time.

We have to solve the problem now. It's happening on the regional level. What is already happening is connectivity between regional approaches. For example, in Singapore, [ReCAAP](#) [Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia] is connected to other centers and other initiatives. As was discussed, the [Virtual Regional Maritime Traffic Centre](#), initiated by Italy, is connected with twenty-three nations and they are not in one region.

It's starting to stitch together. It's hugely complicated, but the regions know how to find each other. Ports of departure and ports of arrival go half around the globe. What you would like is to exchange that information globally.

But waiting for a global setup, I don't think we have time for that.

Admiral Tan Sri Abdul Aziz Jaafar, Malaysia:

Thank you, Admiral Saunes. I think you're asking whether [information] can be shared globally. In the case of antipiracy, it is normally centered on a regional level. For antipiracy in the Malacca Strait, it is being handled by four countries: Malaysia, Indonesia, Singapore, and Thailand. The initiatives by the four countries could be a model for other regions in the antipiracy fight.

Fleet Admiral Julio Soares de Moura Neto, Brazil:

It's necessary to fight challenges like drug trafficking and piracy and people trafficking and weapons trafficking. It's necessary to have a global network of information sharing.

Information exchange is very important so two centers can establish a dialogue. More than that, the countries have to share and automatically disclose information that they have.

If we're able to establish a global framework for what is happening at sea, that will help us figure out how to look after our seas, each in our areas of responsibility and expertise, and each making the right decisions. Knowledge should be globalized.

Regional Maritime Agreements and Global Opportunities

Admiral Guillermo Barrera (Ret.)
CNO Distinguished International Fellow

Professor Thomas Mangold:

It's my honor and pleasure to introduce retired admiral Guillermo Barrera, Colombian Navy. Many remember him fondly from his previous appearances here when he was on active duty.

He served with great distinction for over forty years, since graduating from the Colombian Naval Academy. A surface warfare officer with experience in both Colombia's Coast Guard and Navy, he commanded a patrol boat, a buoy tender, a frigate, and ultimately both the Coast Guard and the Navy.

His shore assignments were just as impressive, including attaché duty in Venezuela and the United States. I'm particularly proud to note that Admiral Barrera is a graduate of both the U.S. Naval Postgraduate School in Monterey, California, and our own Naval Command College here in Newport.



CNO Distinguished International Fellow Admiral Guillermo Barrera (Ret.), Colombia, discusses the importance of CUES (Code for Unplanned Encounters at Sea).

For the last several years after his retirement he has served as our CNO Distinguished International Fellow here at the War College, writing, teaching, and serving as a senior mentor, or “greybeard,” for one and all. We are blessed to have him on our faculty. We’re particularly lucky to have him talk to us today.

Admiral Guillermo Barrera (Ret.), Colombia:

Thank you very much. It is my distinct honor and privilege to come back to the International Seapower Symposium to talk about opportunities to cooperate. It is based on the principle that using the sea brings responsibilities for keeping the sea. Such is the opportunity imposed on today’s maritime leaders by our children, and children of our children.

I witnessed here, yesterday, a tremendous and strategic alignment. You have a very comprehensive understanding of the environment, and the common maritime challenges facing you. This was not the case in 2007 when I came to the Eighteenth International Seapower Symposium. Since, the perception of common maritime challenges has evolved, perhaps due to the first and secondary effects brilliantly described by Vice Admiral [Matthieu] Borsboom [the Netherlands].

WHY A NEW PARADIGM IN COOPERATION?

Our world is facing tremendous challenges in two broad classifications, defying local solutions: transnational threats like terrorism, piracy, transnational organized crime, gangs, and smuggling of weapons, narcotics, people, and money; and large-scale natural or man-originated disasters like oil spills.

Based on these challenges, nations require regional and global support to address capabilities and capacity shortfalls. When I refer to capability, for example, it’s like having vertical sealift. When I refer to having enough, it’s that capability to be successful in operations at sea, and also deny sanctuary for illegal activities. These requirements lead to growing support for naval cooperation.

Ad hoc coalitions predominate today, but over time regional agreements should flourish. Look at recent regional maritime agreements. Regional partners are joining together to address piracy, smuggling, and transnational organized crime. For example, the [Baltic Sea Maritime Cooperation](#) has been evolving from traditional military security to comprehensive security. Other examples are [OPERATION ATALANTA](#) and [Combined Task Force 152](#).

Terrorism is everywhere. For some, the combination of transnational organized crime together with terrorism is called superterrorism. One of the products in the portfolio of transnational organized crime is narcotics, which is financing more than 80 percent of irregular armed groups in the world. This fact moves the indicator from security to defense. Just like normal commerce, the great majority of narco-traffic uses the sea. Safety at sea is very important everywhere today.

Regional solutions could help other regions. We do not have to reinvent the wheel. Working together, cooperation has been improved by standard operating procedures (SOPs).

The maritime community has produced two very important documents:

- The [International Code of Signals](#), addressed by Admiral [Tan Sri Abdul] Aziz [Jaafar, Malaysia], promulgated in 1972, but with origins [going] back to 1858

- International Regulations for Preventing Collisions at Sea [COLREGS], promulgated in the 1960s.

International naval SOPs are the written history of working together, and have helped navies enable rapid response, facilitate command and control, and foster safer cooperation. International naval SOPs have been key elements of success at sea.

CODE FOR UNPLANNED ENCOUNTERS AT SEA

The [Code for Unplanned Encounters at Sea](#) (CUES) is a great example of regional agreement, with applicability in other regions, and the basis for global standard operating procedures.

CUES was introduced and developed in 1998 by the [Western Pacific Naval Symposium](#). It was approved last April, in the plenary session in Qingdao, China, by thirty-one member countries and four observers: Bangladesh, India, Mexico, and Pakistan.

CUES provides a basic communication plan, safety procedures, and maneuvering instructions, strongly advocated by regional navies. Many have been using CUES for more than a decade in their regions.

CUES was initially intended as a multinational regional means to limit mutual interference and uncertainty at sea. It is deconflicting activities at sea. Today, it's a great basis for coordination, cooperation, and the possibility of establishing international standards for use of the sea.

I remember the eighties, when fighting narco-traffic at sea was so difficult, due to lack of a code like CUES. In those years, warships did not communicate with other navies. There was silence. [Yet] we were doing exactly the same job. Sometimes, we were looking at each other, but we never had communications. I wish we had CUES in those years.

GENERAL CONTENTS OF THE CODE FOR UNPLANNED ENCOUNTERS AT SEA

CUES is a twenty-five-page document, divided into three parts and one annex; part I describes the purpose, scope, definitions, and responsibilities; part II highlights very important portions of COLREGS; part III addresses procedures for communications and execution methods; and annex A provides signals and maneuvering instructions based on older signal books.

The following are three examples of CUES signals:

- CM4-15 Desig 10: Establish communications with me by VHF [very-high-frequency] radio on channel ten.
- AV17-8 T2000: I intend to conduct vertical replenishment operations at 2000.
- X Corpen Port 000: I intend to alter my course to port to 000.

If you look at CUES, there is no CM3 or CM5, but you can add other signals, if you think they are needed. AV17-8 T2000—this type of signal is not in the International Code of Signals, but it is very important for naval activities, just like X Corpen Port 000.

SOME TAKEAWAYS REGARDING CUES

- Participation is voluntary and nonbinding: This is not a treaty. It is just a voluntary norm, but reaffirms COLREGS.
- It does not supersede existing national instructions: that's quite important. But you can add CUES to your SOP books on the bridges.
- It does not apply to national coast guards: but nations can expand applicability later.
- CUES does not call for planned activity or exercises, but multilateral exercises using CUES should be encouraged.
- CUES is a tactical publication: therefore, it is not intended for solving territorial disputes.

WHY THE IMPORTANCE OF CUES?

Let me give you several reasons. First, it reinforces international law, like COLREGS and the International Code of Signals. Second, CUES advances proper norms of behavior at sea to improve transparency. Third, CUES reduces prospects for confrontation, because it facilitates remaining out of each other's way. Fourth, CUES serves as a model for global agreements. All regions face safety challenges similar to [those discussed at] the Western Pacific Naval Symposium. And it's essential for navies operating out of their region. For example, if you're in another region in a humanitarian assistance and disaster relief mission, you will be more effective with CUES. Fifth, CUES is the springboard to improved naval cooperation. Greater interoperability is dependent on SOPs. Also, an advanced signal book is needed to support humanitarian assistance and disaster relief, maritime security operations, and search and rescue. Last but not least, CUES enables navies to cooperate, complete basic operations at sea, generate trust and better communications, and exchange at all levels.

IS THE NEXT STEP GLOBAL CUES?

CUES is an opportunity that navies could address during the next two years, until the Twenty-Second International Seapower Symposium.

Therefore, task your headquarters staff to study CUES. That's one of the reasons why I've given you this transparency presentation today. You can hand CUES to your staff.

Second, discuss it at regional security forums. For example, four countries of America are members of CUES. Those countries could help the rest of the countries in America learn about it, and put it in practice.

Provide CUES-recommended changes to the Naval War College. Send them to me. We will prepare draft documents for you to review in two years. You could find possible global applications. You might find useful the development of specific annexes. The draft document could be reviewed at the Twenty-Second International Seapower Symposium.

You have reached a great level of cooperation at sea that can be enhanced and improved, and a level of accomplishing astonishing things, and making a difference in this world.

Quoting the Secretary of the Navy and General Mattis, by serving countries and the whole of humanity, you are called to transcend as maritime leaders. That is the challenge, but also the great opportunity that you have.

Finally, some of you are starting friendships that will last forever. Give your new friends your personal e-mails and cell phone numbers, as a token of trust and confidence. Keep in touch with them regularly, and let those friendships flourish.

Thank you very much. God bless you, and make you successful for the rest of your lives. You are capable of making changes and differences, in your countries and the world.

Lessons Learned in the Search for MH370

Vice Admiral Tim Barrett

Chief of the Royal Australian Navy

Professor Thomas Mangold:

We have an opportunity to learn lessons from a recent coalition operation, the search for Malaysia Airlines MH370.

Speaking is Vice Admiral Tim Barrett, Chief of the Royal Australian Navy. He joined the navy in 1976 as a seaman officer, later specializing in aviation. He has commanded a helicopter squadron, a naval air station, a naval air group, the [Border Protection Command](#), and most recently, the [Australian Fleet](#). His postings ashore have been just as impressive. The admiral holds both bachelor's and master's degrees from the University of New South Wales.

Vice Admiral Tim Barrett, Australia:

I take this opportunity to introduce myself briefly, not only as the new, thirty-first Chief of the Royal Australian Navy, but with it, chairman of the [Indian Ocean Naval Symposium](#).



Vice Admiral Tim Barrett, Chief of the Royal Australian Navy, presents lessons learned from the massive search for Malaysia Airlines flight MH370.

The Chief of Naval Operations asked me to give a brief presentation on the Royal Australian Navy's lessons learned from the search for Malaysia Airlines MH370.

In the spirit of what we discussed, I want to consider the strategic implications of collaboration among navies while on that search, and the lessons that we can take away from it.

UTILITY OF NAVIES AND BENEFITS OF COLLABORATION

The bottom line up front: This is not a story of epic rescue or survival. I will not solve the mystery. There were many lessons to be learned. None are real surprises. Many simply validate the discussion over the last two days here at Newport. It's about the utility of navies and the benefits of collaboration.

Let us not forget, this was not a learning exercise. This was a tragedy. At the outset, I pay my respects to families and friends of all of those who lost their lives in March in MH370, and also MH17 in July. The number of countries represented by passengers and crew on board those two aircraft is instructive: eighteen nations, total. On MH370, people were from Australia, Canada, China, France, Malaysia, India, Indonesia, Iran, Netherlands, New Zealand, Russia, Taiwan, Ukraine, and United States.

The search in both the northern and southern corridors involved twenty-six nations. In the southern corridor, which is the area that I'll concentrate on, search assets included ships and aircraft from Australia, China, Japan, Malaysia, New Zealand, South Korea, United Kingdom, and United States—truly a multinational operation.

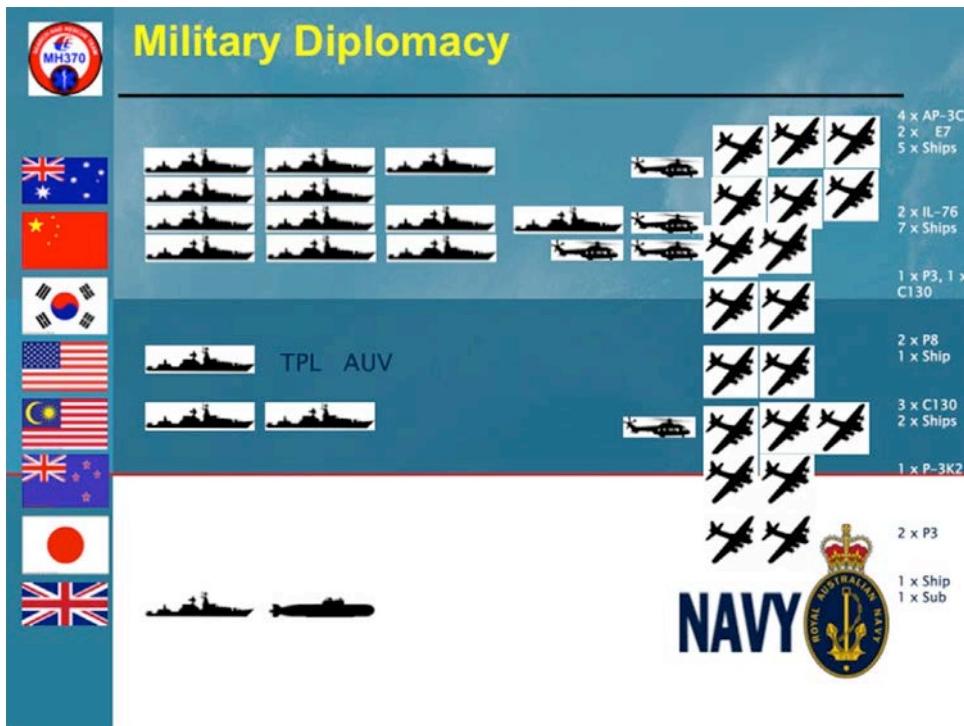
The lessons learned by the Royal Australian Navy will not surprise anyone, in their fundamental direction. They're principally about good communications and logistics.

What will be of particular interest is the scale and complexity of the challenges inherent in these lessons. For medium-sized navies, the scale and complexity are considerable, and even so for a larger navy. A small naval force could find such activities overwhelming. As we consider these lessons, it is worth reflecting on how they affect different naval forces, and what it means for the way we cooperate in the future.

The breadth and depth of the tragedy of Flight MH370 were matched only by the swiftness and scale of response, particularly in the southern corridor. I'm reminded of the global nature of our lives. No single nation could have conducted this search on its own. For sailors, I realize this is no great revelation.

We have agreed that maritime trade and naval ships have plied the great global commons for centuries. Mass air travel and the ubiquitous shipping container have brought about the benefits and responsibilities of global citizenship for every nation. The benefits are clearly evident from day to day. Responsibilities only become clear when extraordinary events occur—when parts of the intricate global transport system on which we depend stop functioning normally. This was the case with MH370.

The nations that responded demonstrated some of the classic features of maritime power: readiness and adaptability to respond at short notice, strategic mobility and reach to deploy to remote and distant locations, and persistent ability to sustain the operation. Even now, six months after the tragedy, ships still continue the search—Chinese, Malaysian, and an Australian-contracted vessels—all coordinated



Slide from Vice Admiral Tim Barrett's presentation, illustrating the numbers of ships and aircraft searching the Southern Ocean for missing Malaysian flight MH370.

through the [Australian Maritime Safety Authority](#). They demonstrate the ability to cooperate for a common purpose.

When we look at MH370, many elements required for successful cooperation are evident: transparency, a disposition to share, a mechanism to share, and willingness to act together. This was entirely necessary when you consider the scale of the search.

EQUIVALENT OF SEARCHING THE MEDITERRANEAN, BUT BASING FORCES IN DENMARK

Let me put some context around the search. The search in the southern area had several components to it. One was a surface search, initially in hope of finding survivors, but increasingly just looking for debris. The surface search covered an area larger than the Mediterranean Sea, and over 3 million square nautical miles.

This was achieved at huge distance from the nearest ports and air bases, transit distances being between 600 and 1,500 nautical miles. It's the equivalent of searching the Mediterranean, but basing your forces in Denmark. A useful comparison is the [Air France](#) search in the Atlantic a few years ago, where the search area was about 1,700 square kilometers, less than 1 percent of the search area for MH370.

An acoustic search focused on the underwater locator beacon, marking the flight data recorder. Although there were some possible acoustic detections, these were, after time, discounted after further investigation. The surface and acoustic searches

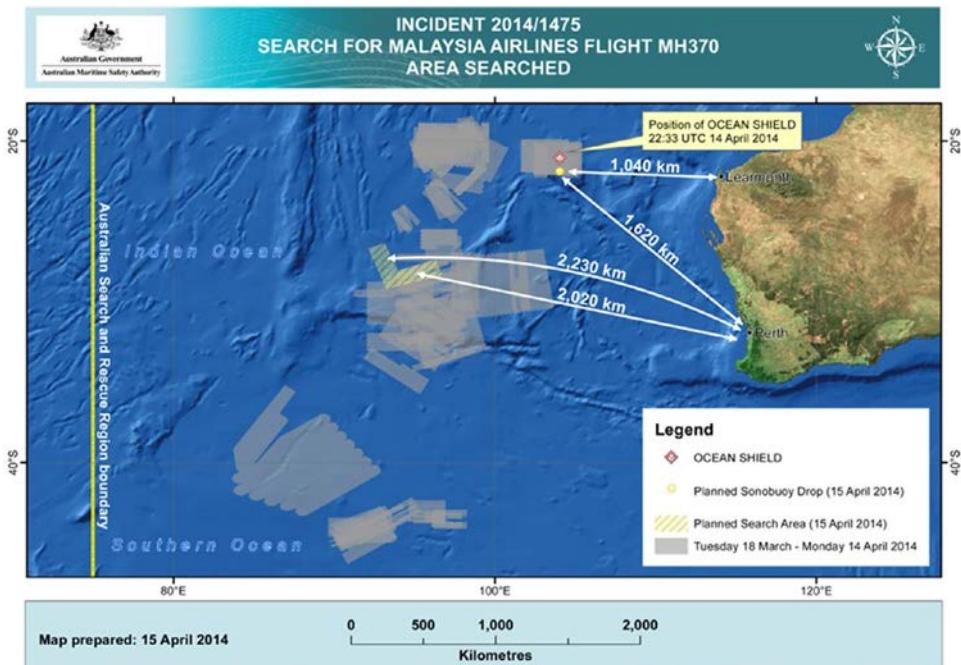


Chart shows vessels operating in the remote “roaring forties” during an intensive search Vice Admiral Tim Barrett equates to “exploring the dark side of the moon.”

ceased by 28 April, given the assessment that there was no prospect of success using those methods.

The major challenge, therefore, was in defining a search datum.¹ To some extent, this revealed the enormity of the task. Clearly, the distance from operating bases was one challenge, as was the size of the search area itself.

A factor slightly less apparent is the distance by which the search boxes moved. Because defining the search datum required some novel methods in determining the aircraft’s track, search boxes moved large distances, as surface and acoustic searches progressed.

The search now concentrates on an area around what is known as the “Seventh Arc,” so-called because it is drawn from positional data from the seventh exchange of information between the aircraft satellite communication systems and land bases. We are concentrating on a lot smaller area now, only sixty thousand square kilometers. Even this carries huge challenges.

Bottom topography for the search area is very complex, spanning a huge feature known as Broken Ridge, where the boundary between two tectonic plates lies. Depths range from seven meters to around five thousand meters. Until now, most of what we knew about the bottom topography was derived from satellite data, which had a horizontal resolution of about one kilometer. We are looking for an object measured in tens of meters.

1. In search and rescue operations, *datum* is “the most probable location of the search object, corrected for drift.” Joint Chiefs of Staff, *National Search and Rescue Manual*, vol. 1, *National Search and Rescue System*, Joint Publication 3-50 (1 February 1991), p. 5-1.

Search vessels are operating in and around the “roaring forties,” conducting seamanship evolutions in huge seas, and well beyond any range of aeromedical evacuation. We do not want to create more injury in this search. The search remains a huge challenge, just operating in these remote and challenging areas.

It's often said that we know more about some other planets than we know about our own planet's oceans. The search for MH370 has reinforced this judgment. The search is now the equivalent of exploring the dark side of the moon. We're discovering more about this part of the ocean than we ever previously knew. Having set the context, let me briefly talk about some specific lessons learned.

FIRST LESSON: NEED FOR CLEAR AND PREDICTABLE COMMUNICATIONS BETWEEN ALL PARTIES

The first lesson is quite obvious. This lesson will come back to us in many different ways. It underpins about every aspect of cooperation in the maritime sphere, be it strategic direction, planning, conduct of operations, or media engagement.

The need for clear and predictable communications has technical, procedural, and cultural aspects to it:

- Technical: we need to have compatible systems to talk to each other.
- Procedural: requirements for decision making and the level at which those decisions are made can vary among nations.
- Cultural: communication is much more than just the systems and the words we use; it's all about the meaning we try to convey.

We had issues with each of these aspects during the search—not huge—but there were those that needed constant management.



Clear and predictable communications among all search parties are crucial.

For example, participating nations had different procedures and methods for operational decision making. In Australia, we try to drive decision making down to the level that has the best ability to make that decision and put that decision into effect. We also tend to have a matrix of communication methods surrounding the formal command and control system. And often we try to conduct communications at a lower and more tactical level. Not everyone adopts this approach. This is not a criticism. This is a reflection on how we do business.

To maximize our ability to cooperate effectively, we need to find ways of communicating that are mutually understood. We've just had an object lesson in that, in terms of the [Code for Unplanned Encounters at Sea](#).



Quality liaison officers skilled in organization, planning, and public affairs have critical roles in facilitating a major search.

SECOND LESSON: THE UTILITY OF LIAISON OFFICERS

We found one of the most effective ways to enhance communication is the provision of quality liaison officers; this was critical to the search effort, given the disparate nations and agencies involved.

Participating agencies need to deploy liaison officers to the lead, coordinating headquarters as early as possible. The liaison staff need the ability to cover planning, operations, and public affairs; these are the most time-sensitive tasks. This is a wide skill set. So more than one liaison officer is often necessary. Even looking at the languages, this search had native speakers with five different languages involved. Clearly, these skills were highly valued among all liaison officers.

To move to a point stressed yesterday, liaison officers must be high quality and must be trusted. This is their key role, above all. As said in this audience and

elsewhere, while you can surge capability, you can't surge trust. Liaison officers must establish trust in the headquarters in which they are deployed. They must understand the circumstances and organizations of their hosts. They need to have effective communications, both back to their [parent] organizations, and also forward to their deployed assets.

The liaison staff should be given the maximum possible freedom to build that trust.

The location of liaison staff must be kept under constant review. As the operation develops, it may be necessary to deploy liaison staff forward to facilitate better tactical communications. For example, as this search progressed, the embarkation of a Chinese liaison officer on our tanker, HMAS *Success* (AOR 304), significantly enhanced the capacity for cooperation. We did not discover that until well inside of the search time.

By the end of the surface and acoustic search phase, liaison officers had been employed at headquarters and air operating bases and deployed in units at sea. Such a model, developed so early, is likely to be of great value in the future.

THIRD LESSON: LIAISON OFFICERS ARE NEEDED BETWEEN NATIONAL AGENCIES

Liaison officers are needed not only between nations. They are also needed between agencies of one nation. In Perth, we had several headquarters operating, not just with operations from each nation, but with agencies from within each nation.

Search and rescue and humanitarian assistance and disaster relief operations are often led by civilian agencies. This has been the case in this search, with the Australian Maritime Safety Authority having the lead. For large-scale search events, the majority of the first-response assets are still likely to be military. The civilian agency may not have a good understanding of the capability of those assets, or the military organization that directs them.

For example, militaries are typically better able to conduct concurrent planning and operations in confused and ambiguous environments. Military liaison officers deployed to the lead civilian agency are able to provide specialist advice, which ensures that assets are employed to their best effect.

A multinational search, not surprisingly, is a far more complex command and control environment, as I mentioned, as we found in Perth. Providing information each nation needs to inform its decision making is an important task, and one that liaison officers are key to facilitating.

FOURTH LESSON: COORDINATION OF PUBLIC AFFAIRS INFORMATION IS A CHALLENGE

[The challenge of coordinating public affairs information] will not be a surprise to anyone. For an international event like this search, the thirst for information is massive. There were over four hundred accredited media contacts, and hundreds of specific media inquiries, in addition to over one hundred packages of media information pushed out by Australian authorities alone in the first few weeks.

For the Twitterazzi among us, please note that the MH370 search generated over 4 million tweets in the first two weeks after [the plane] disappeared. When the

search moved to the Australian search and rescue zone, the number of followers of the Australian Maritime Safety Authority's Twitter feed went from 1,800 to 18,000 in two days.

During the search, media attention was magnified, not just by the intrinsic nature of events, but by crowd-sourcing activities, initially aimed at helping the search. One company sought amateur satellite-imagery analysts online; its server crashed with over 3 million responses in a short period of time.

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Tony Abbott: Australia owes it to world to find MH370 – video



Tony Abbott says Australia owes it to the wider world to keep searching for 'quite some time to come' for missing flight MH370. He said it was a difficult exercise with limited information, but it was an 'act of international citizenship'. Australia is heading up the search efforts from Perth

Source: Reuters, Length: 1min 45sec, theguardian.com, Monday 31 March 2014,

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Australia's support to search efforts is: "an act of international citizenship"

In their endeavor to offer continuous information about the missing flight, the media often relayed inaccurate details to the public, creating another challenge for search participants.

In the absence of factual information provided by the lead agency, media will try to find the stories they can—again, no great surprise. Often, these were not correct and gave unrealistic expectations, which can cause confusion. Modern communications enable stories to spread very rapidly. Media reporting itself will then become an issue, and divert attention from the actual operation.

With a multinational search, this challenge is compounded, as each nation naturally wants to keep its own commands and media informed. Meeting multiple government

and media reporting deadlines requires mutual understanding, respect, and a great deal of patience.

The bottom line is that the coordination of public affairs information will always be a challenge, and we have to get used to it.

FIFTH LESSON: INTERCHANGEABLE LOGISTICS

This lesson is more technical; it's our ability to create a level of—not interoperable—but what I call interchangeable logistics.

During the search—conducted over a large area and in a remote part of the Indian Ocean—it was fortunate that there were three replenishment ships involved. For example, the ability for Australia to refuel Malaysian ships enabled searches where Australia did not have a vessel. It is a classic example of the whole being greater than the sum of the parts.

We also noticed the endurance of the initial Chinese task group, which assisted in the surface and acoustic searches for several weeks. It was achieved because of its own inherent sea-replenishment capability.



Australian ships refueled Malaysian ships, enabling a whole greater than the sum of the parts.

We did not have full interoperability for replenishment at sea between Chinese, Malaysian, and Australian ships; this did, at times, hamper part of the operation.

Looking to the future, there is merit in codifying methods for logistics interoperability. This is not a simple fix. It is a consideration affecting operational planning at the outset of an event such as this.

KEY TAKE-HOME POINTS

You should note that I wrote these well before I arrived at the International Seapower Symposium. I ask you to put them in the context of all that we considered in yesterday's discussions.

First, cooperation must be practiced frequently and routinely for it to be refined and enhanced. Habits of cooperation are developed over many years, and it takes time to build relationships and trust. Effective use of liaison officers can enhance

this transparency and trust. As you heard yesterday, and as I said, you can surge capability, but you can't surge trust.

Second, we have opportunities to build habits of cooperation through routine activities, not just when emergencies like this occur. Major exercises such as RIM OF THE PACIFIC EXERCISE ([RIMPAC](#)) are a good example. Institutions such as the Association of Southeast Asian Nations ([ASEAN](#)), [Indian Ocean Rim Association](#), [Western Pacific Naval Symposium](#), and Indian Ocean Naval Symposium can also play an important part to encourage forward-looking, cooperative activities.

Third, the choice to cooperate, collaborate, and effectively and consistently maintain good order at sea is a choice to preserve and promote the security and prosperity of all nations. It is a choice many nations made in the midst of the MH370 tragedy.

We have not yet found MH370, but in my observation, it is not because of a lack of commitment or cooperation. As tragic as the event was, the subsequent search has shown a spirit of collaboration across nations that fellow mariners are well known for. It provides a good example of how cooperation can work.

I conclude by saying to those poor souls aboard MH370, wherever you may be, may you rest in peace. Thank you.

DISCUSSION

Admiral R. K. Dhowan, India:

That was a very enriching presentation, and a massive search operation for a very tragic incident.

In any search at sea, time-late² and datum are very important. Were there any lessons learned in this regard that could have helped make the search easier? It became very difficult, like finding a needle in a haystack; [or as] the media mentioned, [the initial difficulty was] finding the haystack itself. What would be your response?

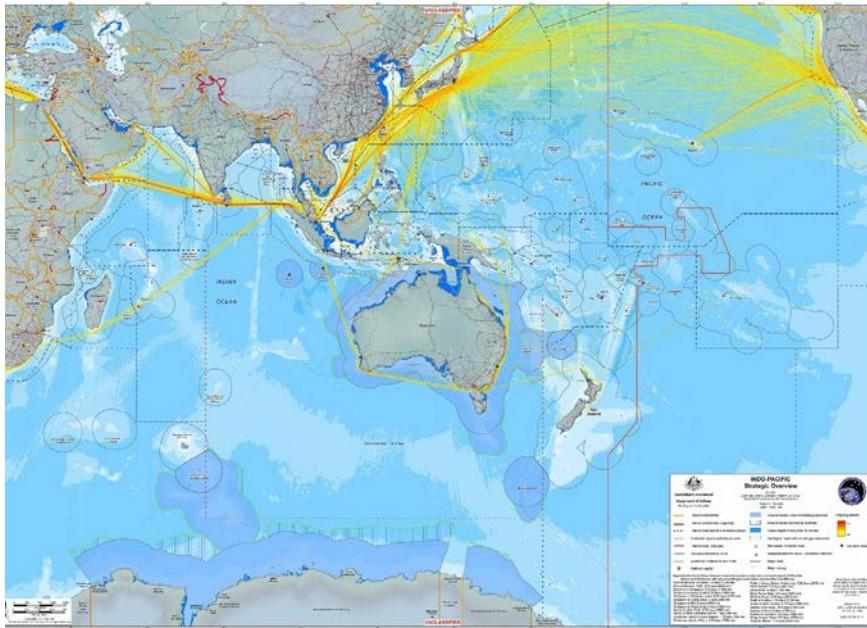
Vice Admiral Tim Barrett, Australia:

Thank you for that. The area we were searching came well after the aircraft was lost. The discussion around those first search areas is not something I will delve into. Clearly, it complicated the fact that, even when a datum was established in the Southern Ocean, there was still time and distance that needed to be taken into account.

The issue, from Mission Australia's perspective, was preparedness. We had to act swiftly when the call was made, to get relevant ships with a capacity to do exactly what was called for in that part of the Southern Ocean. I'm talking about debates around whether it was still a rescue operation at that stage, whether it was immediately a survey operation to look for something on the ocean floor, or whether we were really just searching for debris.

Each nation has to understand how it may respond to something of this nature at distance—how you continue, within your own preparedness, to have ships capable of doing each of those three activities. In our case, it required preparedness on [both] coasts for immediate deployment.

2. *Time-late* is the time lag between some datum's generation and actions taken.



Where to search, how to respond, and how to position in the future

Do we need to do that from a naval perspective? Yes. Do we need to do it from a maritime perspective? Even more so now, given the nature of air transport, and the numbers of aircraft traveling around that part of the world.

It has had an effect on how Australia has looked at positioning its ships with those capabilities on either side of our nation. I imagine similar thoughts are held in Malaysia, China, and others intimately involved with this search.

Rear Admiral Lai Chung Han, Singapore:

Thank you for the very good presentation. I offer two comments, with permission of [Admiral] Tan Sri Aziz, as well as Admiral Hien Nguyen from the Vietnam Navy.

Admiral Hien alluded to the initial search in the South China Sea for about a week. The real story is heartwarming. Countries were prepared to set aside national interests in order to unify efforts for the search. The search area in the South China Sea was in Vietnamese waters, as well as disputed waters. Given the tragedy—and there is the credit to Vietnam—[the Vietnamese] quickly allowed regional forces to enter their waters, as well as disputed waters, to conduct the search.

I think that's a significant lesson learned for naval forces around the world.

The second comment is that when the search migrated to the South Pacific, and we saw the vastness of the air search, communications were very important, and likewise, info sharing—and not just with naval forces, but with merchant navies, as well.

Very few naval ships traverse that area, but some number of commercial shipping [vessels] does. The [Information Fusion Centre](#) in Singapore pushed information and asked commercial shipping to note and alert us of any sighting of debris. Even if there was no sighting of debris, that itself was a useful indication.

Vice Admiral Tim Barrett, Australia:

Admiral Lai, thank you. I agree with those comments entirely.

Rear Admiral Makbul Hossain, Bangladesh:

Thank you very much for a nice presentation.

This MH370 incident has brought maritime leaders to a consensus that we need to operate together for similar disasters. In the last couple of years, we find that natural disasters are taking place in different parts of the world, as discussed.

Can we take some lesson that if anything happens in any part of the world, the regional countries will take the initiative? Can we come to a consensus on some criteria for taking the initiative, or that the United Nations will take the initiative?

Vice Admiral Tim Barrett, Australia:

There's a balance between what is humanly possible between nations, and their ability to respond.

I'll use the Australian example. Our jurisdiction for search and rescue is 54 million square nautical miles, about 10 percent of the world's surface. Our ability to respond to that—regardless of how big the defense budget and how many ships given—will be limited, as we've shown in the charts, to just how far away it may be, and the ability to be prepared to respond to those activities.

While there may be abilities to form regionally to respond to those sorts of activities, my view is that we will continue to see a rapid coalition form to respond. The emphasis should be on having enabling measures in place, rather than a standing force to operate against something like this. So when you do come together, you're able to operate more efficiently.

That's how lessons learned are going to be more important than physically raising a standing ability to perform rescues of this nature.

Rear Admiral Piotr Stocki, Poland:

Before starting a search operation, you were trying to define the most possible place of an airplane crash. It means you had to analyze information coming from navigation systems, satellites, communication systems, air traffic control, land-based stations, etc.

Could you briefly describe the analytical system giving you a more or less precise track and position of that plane, and how did you elaborate on that analytical process?

Vice Admiral Tim Barrett, Australia:

It is a complex analysis and continues at the moment. I mentioned in my presentation that we're looking at elements around what is known as the Seventh Arc, a piece of information that was gained through satellite communications from the aircraft itself.

The initial phases of the search were based on land-based, air traffic information. It then moved to satellite communications within the aircraft itself. It is now being looked at—the information sent by aircraft systems, not necessarily from those within the aircraft, but [between] automated systems within the aircraft itself.

That's balanced around the vagaries of just how much you can predict from those systems, which are not designed, necessarily, to geo-locate but designed to provide

aircraft history of equipment on board. So, you're not necessarily going to get the fidelity that you might need to provide geo-location. That's about as far as I can go. This is not because we are not aware. It's just that this is still an ongoing means by which we're trying to analyze the data we have available to us.

We have fragments that have drawn us to this particular part of the world, to this particular part of the ocean. Still, we have to manage the consequences of not being able to get fidelity. As I said, it is a sixty-thousand-square-nautical-mile search radius at the moment.

Commander Barry Buss, United States:

Barry Buss, from U.S. Navy, currently in a position with the Colombian Navy in Bogotá.

As a former personnel exchange officer with Australia, I had the benefit of learning more about how an operation—and an entire navy—is run during my three years there than I perhaps was exposed to for decades of my career.

My question is regarding the value of your personnel exchange programs. You talked at length about the quality of the liaison officer, as well as having people empowered to make decisions. At the senior levels during this operation, were you able to leverage those relationships at the highest levels to break through some information-sharing challenges?

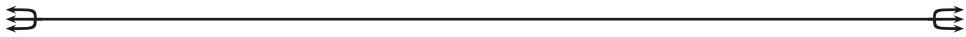
Vice Admiral Tim Barrett, Australia:

It's a very significant question. I use an example that might best answer this. As mentioned in my bio, I was commander of Border Protection Command, [which has been working] in Australia over the last four years to stem the tide of people smuggling, bringing people to Australia's shores, illegally.

The issue, we have found, is the need to share information, not just from within our military organizations, but across a whole government. It's needed to solve the problem, going wider than just one event: how it [people smuggling] might have been funded and raised—all of the attendant parts that drive someone to make that journey in the first place.

We pushed down the level of decision making, to get immediate action out of immediate intelligence that arises from all sources. At the same time, it has broken a number of silos that previously existed between agencies. Timeliness of the information, enabling people at the tactical level, has been the outcome we've sought.

With that experience, we are developing, within our own military, a sense that you need to devolve the decision making to the tactical level, with shared information going beyond the traditional silos. I have observed that over the last ten years in our military, which is benefiting those serving at the tactical level. They're getting more freedom to maneuver and act, based on relevant information, now, rather than waiting to be told with incomplete information.



Maritime Implications of Climate Change

Rear Admiral David Titley (Ret.)

*Director, Center for Solutions to Weather and Climate Risk,
Pennsylvania State University*

Professor Thomas Mangold:

It is my pleasure to introduce our third special guest lecturer, Dr. David Titley. I will highlight a few aspects of his biography, because it's so interesting and unique.

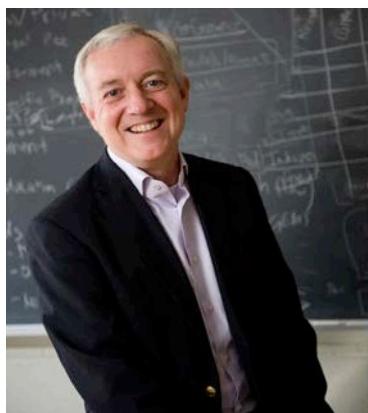
He's a professor of practice in the Department of Meteorology at Pennsylvania State University and director of the university's Center for Solutions to Weather and Climate Risk.

He's also a career naval officer, who retired after thirty-two years of service as a rear admiral. He initiated the U.S. Navy's first **Task Force Climate Change**. He is a nationally known expert in climate, the Arctic, and national security.

He holds a bachelor's degree from Pennsylvania State University in meteorology, and a PhD from the U.S. Naval Postgraduate School, again in meteorology. He was recently inducted into the American Meteorological Society, arguably the most prominent honor in his profession.

Rear Admiral David Titley (Ret.), United States:

Thank you so much. CNO, thank you for inviting me, and the opportunity to talk about this, not only here, but with the follow-on panel discussion headed by Admiral [Mark] Norman [Canada]. Admiral Howe, thanks for the support that your staff has given me. And [Rear] Admiral [Douglas] Venlet [United States], thanks for the N3/N5 support.



Climate Risk & National Security: People, not Polar Bears



Rear Admiral Dave Titley, USN (ret.), Ph.D.
Director, Center for Solutions to Weather and Climate Risk
Penn State University

"Counting the Cards in Nature's Casino"

19 September 2014

Rear Admiral David Titley (Ret.), climate expert, talks about the effects climate change has not only on the military, but on civilization in general.

Most of all, thanks for the number of spouses here. Yes, it's a maritime issue, but it's really a people issue. This is important for everybody, not just those of us who are, or were, wearing the uniform.

I'm going to talk about climate, climate risk, and climate change. As we talk about this, I ask you to remember this is only one of the issues and, oftentimes, not even the most important. Sometimes it is, sometimes it isn't, but it is one of the issues of the twenty-first century.

We have demographics. We're on a road to 8 billion people, give or take. We're going to deal with changes in the physical environment, in the context of a whole lot more people than we've ever had. All of those people demand, need, want—and have some justification for—adequate resources for an adequate life. So, that's food, energy, and water. A common theme to all of those is water. It's really hard to get food without water. It's also really hard to get most forms of energy without water there.

Whether we want to be or not, we are in a globalized society. None of us get the luxury, or the opportunity, to build a wall around our respective society, our respective nation, and say, "Well, that climate stuff is going to be somebody else's problem." I'll give a few examples of that as we go on. Pretty much what happens to one of us is going to impact just about everybody else. Technology marches on, and that does a lot of things. One [thing it does] is force transparency. If you think about it, the whole of Internet communications [is an example]. Not only are we globalized, but we also have greater insight into how everybody else is working. Then, finally, what are the G20 finance ministers doing about climate change, at least collectively? We tell ourselves, in large parts of the world, we're out of money, and we're in very tough financial times. It's not only about climate and climate risk. It's demographics, resources, how we're connected, and the fiscal constraints that we live with. All of these come together.

For the rest of the talk, I am going to talk about climate. As we think about this as policy makers, as senior leaders in our respective countries, you've got to consider all of this as a package. It's tough to think of just one [issue] in isolation.

CLIMATE CHANGE: IT'S ABOUT MORE THAN POLAR BEARS

Who's read the entire [Intergovernmental Panel on Climate Change](#) report, about 1,800 pages? Nobody? I'm shocked. Maybe the [National Climate Assessment](#) report? That came in at a very svelte thousand pages. Anybody read that? No.

Here's my analysis on climate . . .

It's about People. Type into Google "climate change" and then click on "Images." I did this one Saturday night. You count up the number of polar bear or polar bear-related images and it's about a third.

Unfortunately, climate change has been visually associated with these poor polar bears, floating on some ice floe that's about to melt. I don't have anything against the polar bears. I'm sure they're great creatures. But this is more important than polar bears.

This is about us. This is about you, your families, your neighbors, your society, our countries. This is fundamentally a people issue. That's who is going to get impacted by the climate changing. This is really about people.

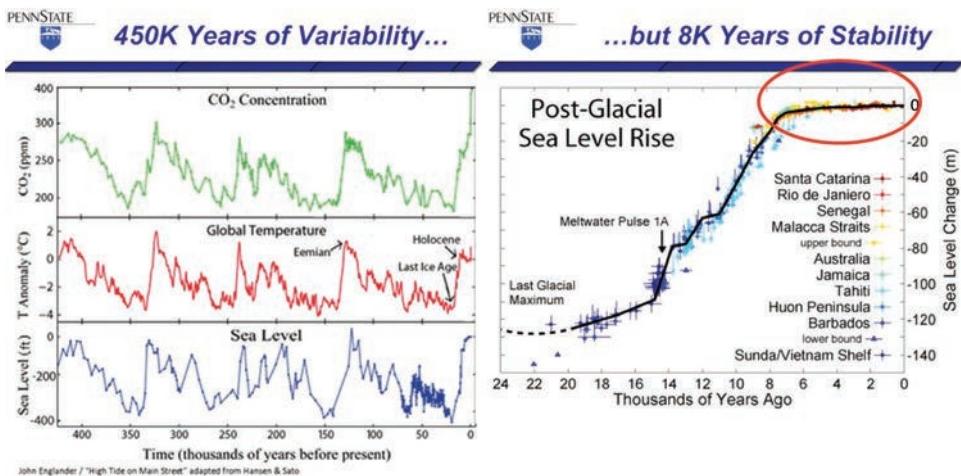
It's about Water. You can certainly find a few integrating principles. Water is one of those principles—too much, too little, wrong place, wrong time, salty where you

thought it was going to be fresh, and liquid where it used to be frozen, like in the Arctic.

The chemistry is changing too. All the carbon dioxide we're putting out, almost half of it gets absorbed by the ocean. That changes the chemistry, so it becomes more acidic. If you want one thing to think about regarding these changes, water's a pretty good one.

It's about Change. A lot of times, I am told, "Hey, Titley, don't you know the climate's always changing, and it's always going to change?" If you're on geologic time-scales—like a graph that goes back almost half a million years ago—it doesn't matter what you look at. You can look at carbon dioxide. You can look at temperature. You can look at sea level—this [bottom line] is in hundreds of feet. You can see over time, up and down, up and down, up and down. Did mankind do any of this? Absolutely not. This is all because of the way the earth's system works.

The part we care about is at the very right-hand side of the next graph. Where did we get civilization? It was right about here (see circled area in graph below).



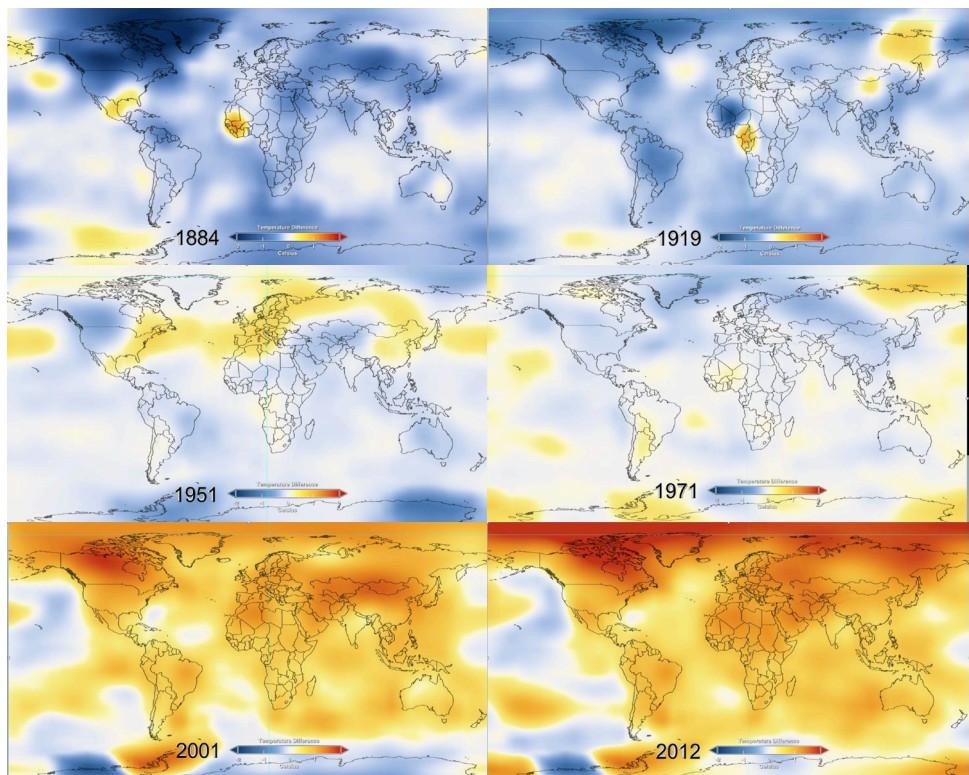
The climate varied for 450 thousand years, but has been relatively stable for the last eight thousand years.

We're in the Goldilocks period—the-not-too-much, not-too-little period. We had this relatively rare period of stability. That's when we got agriculture. That's when we got civilization. The next thing, we're all carrying around iPhones. If we start changing this, getting rid of the stability, [we will start to see problems].

EVIDENCE OF CHANGE

Now, we say, "That's interesting, but I'm in a navy. I'm in a maritime service. What does it mean for me?" This is why I say it's about change, and that's what we're going to deal with. I'll show some of the evidence.

The following shows NASA [National Aeronautics and Space Administration] temperatures, graphically depicted for the world, between 1884 to 2012. Blue [shades of gray in 1884–1971] is colder than it currently is, red [dark gray in 2001–2012] is warmer than the average. These are all data. This isn't anybody's



NASA's global temperature changes between 1884 and 2012

projection. It's no computer model. It's no "maybe, we think." This also doesn't say why it's changing.

We looked at a lot of stuff, like, is the sun changing? Turns out, if it's changing anything, it's slightly lower. It sure isn't going up, and that's, again, from observations.

You've got to say, "Well, okay, if it's just internal variability, where's all this heat coming from? There's actually more of it." It's not like we're sloshing around heat; it's like we're putting in heat.

We know why this is happening. Again, that's really not what I'm going to talk about today, but in the question and answer period, or in the panel, if anybody's curious I'm happy to talk about this.

I'll show one more piece of evidence. This graph shows hours per year of flooding in Norfolk, Virginia, within a few kilometers of our naval base. This is not the Netherlands. This is a neighborhood in Norfolk, Virginia. From these data, you can see the number of hours this neighborhood is underwater. Here are the observations. If you look at that in a navigation context you say, "Yeah, we have some set and drift here.¹ We got some changes going on." Why is this?

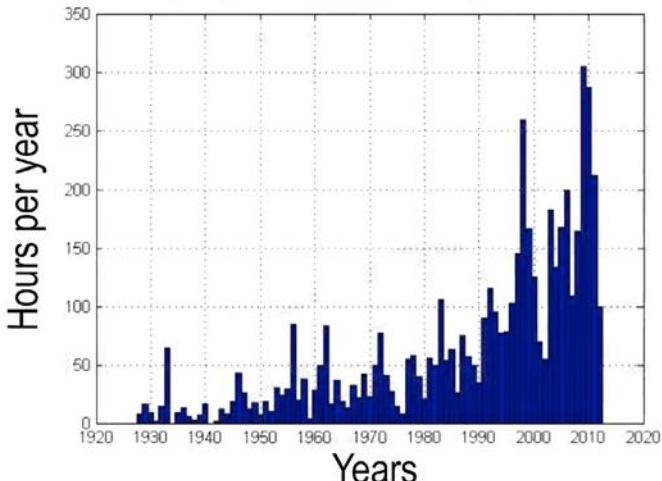
I get asked if I believe in climate change. The answer is no, I don't. I am convinced by the evidence, though. And why is that? It is really cutting-edge nineteenth-century science, all figured out by a bunch of old, dead white guys back in the

1. "Set and drift" is a navigation term. "Set" is the bearing in the direction the current is flowing. "Drift" is the magnitude, or speed of the current.



Recurrent Flooding in Norfolk, Virginia

Hours per year that the Hague flooded



Graph depicting annual increase of flooding in a neighborhood in Norfolk, Virginia

1800s: Joseph Fourier,² Svante Arrhenius,³ John Tyndall⁴—a Frenchman, a Swede, an Irishman.

Basically, these guys figured out that the atmosphere would be a lot colder without some gases in it. We're putting some more of those gases in. Svante Arrhenius did some of the first calculations. He said, "Hey, this Industrial Revolution is going on. We're going to change the climate." He didn't get right how much we're changing it. But his radiative transfer equation tells you what it is. This is nothing more than cutting-edge nineteenth-century science. That's all I'm going to talk about as far as the basics.

MILITARY ASPECTS OF CLIMATE CHANGE

Let's get to the military and maritime aspects [of climate change]. The following graphic is out of Joint Publication 5-0, *Joint Operation Planning*. I'm sure the staff officers who wrote this were not really thinking about climate change.

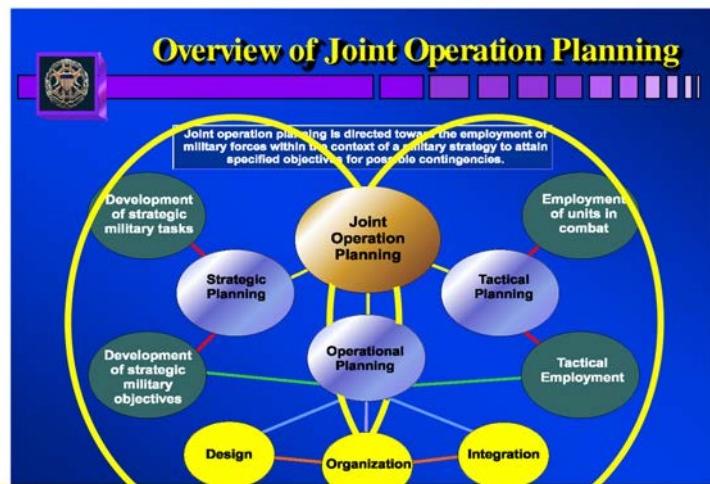
Look at the left: "strategic planning," "development of strategic military objectives," and "design." Look on the right: "tactical planning," "tactical employment," "employment of units in combat."

2. Joseph Fourier is generally credited with the discovery of the **greenhouse effect**.

3. Svante Arrhenius was the first scientist to attempt to calculate how changes in the levels of carbon dioxide in the atmosphere could alter the surface temperature through the greenhouse effect.

4. John Tyndall explained the heat in the earth's atmosphere in terms of capacities of the various gases in the air to absorb radiant heat, also known as infrared radiation.

Plan in the Climate World, Execute in the Weather World



The Business End of Climate Change: Our Changing Weather

Our changing weather and its effect on maritime planning

You look at this as what you do for climate. You plan for change, or climate, you execute in weather. Weather is like those cards that you have today. Climate is the deck they came from. That's another way to think about it.

We care about what we are going to operate in—how that is going to change our operational concepts, force structure, mission sets. Those are the things we care about. That's really what we're going to talk about.

Just in a simple way—you can always think of more—these are things that potential change in climate can impact.

- The Arctic. Probably the biggest change we see right now.
- Bases. A lot of sea-level rise. Also, things like drought and fire for an inland base.
- Disaster relief. Are we going to do more? Are we going to do less? Who's doing that?
- Security threats. It can be a contributing factor.

Then in simple terms, does that affect our capacity? Are we ready for this mission? Is it a new mission, or are we going to do an existing mission in a potentially new environment?

THE ARCTIC

I would argue the Arctic is a new mission, certainly for surface forces. I'm not sure we're ready. We don't [operate in it] much, and we don't have a lot of capacity up there. I say, generally, "we"—not singling out any one nation.

Here are my three things for the Arctic:

- It is an ocean. It's primarily a maritime environment. I probably won't get a lot of pushback from this audience. Sometimes, when I talk to land forces,

they're not quite as convinced. It's an ocean, surrounded by land, and there are roughly several million people living up in the Arctic.

- It's changing. It's changing faster, physically, than any other place in the world.
- It's not a vacuum. It's not like Las Vegas. What happens in the Arctic does not stay in the Arctic. We see this politically and physically. We see this in geostrategic terms as well as from a climate or an ocean [perspective]. The Arctic, whether we like it or not, impacts what happens down here, and vice versa.

The following comes from my colleagues at the [National Oceanic and Atmospheric Administration](#) (NOAA). Between 2004 and 2012, civilian satellites took images of the North Pole, using radar. It can look through clouds, in day and night. You get a different signal back if it's really hard, thick, old ice than if it's new ice. We've coded this. The dark blue [gray] is the new ice. The white is the really hard stuff.

In the mid-1990s, there was lot of white, old, thick ice. In 2005, it's less, and lower in 2006. In 2007, boom, where did the ice go? It sort of tries to come back, but not very well.

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Arctic Sea Ice (1994–2012)

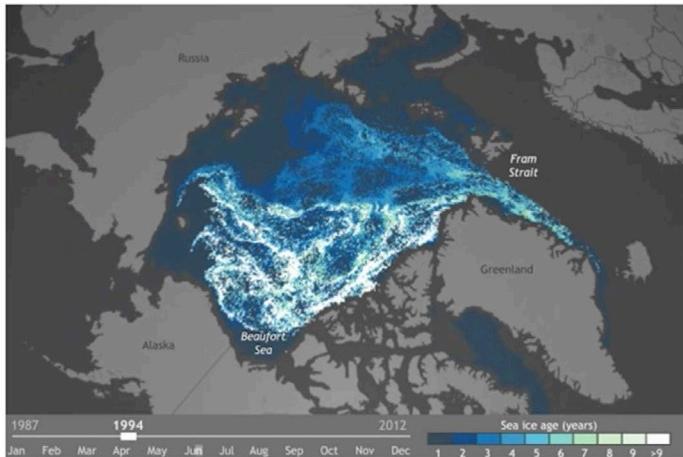


Image shows the diminishing presence of older, thick ice and the increased amount of newer ice in the Arctic.

By 2012, all you see is little pieces of old ice, and then a lot of new ice. Vice Admiral [Peter V.] Neffenger, U.S. Coast Guard, on the panel, is seeing a lot of variability, and he'll talk about that. Ten years ago, nobody predicted this. This is what's going on in the Arctic today.

Based on that, the Chief of Naval Operations directed the U.S. Navy to redo the 2009 Arctic Roadmap, which was updated in February 2014. The [U.S. Navy Arctic Roadmap 2014–2030](#) shows today's Arctic trade routes and those projected in the future. For six weeks in 2030 there could be open water, with a couple of weeks of shoulder season on either side. That's a huge change and has lots of implications. Again, I think Admiral Neffenger is going to talk about some of those.



Courtesy: US Navy – 2014 Arctic Roadmap

Northern Sea Route
2025: 6 weeks open
41' controlling draft

Transpolar Route
2025: 2 weeks open
Deep ocean transit

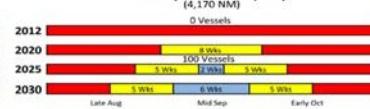
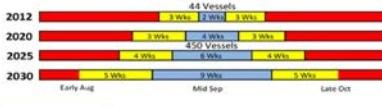
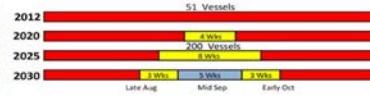
Northwest Passage
2025: intermittently open
33' controlling draft

► Crossroads
Sea route distances:
Distance from the
Bering Strait to
Rotterdam

Arctic trade routes . . .

Navy Arctic Roadmap 2014**Arctic Sea Route Navigability**

Bering Strait (BS)

Transpolar Route (TPR)
(4,170 NM)Northern Sea Route (NSR)
(4,740 NM)Northwest Passage (NWP)
(5,225 NM)

> 40% sea ice
Shoulder Season: 10-40% sea ice
Open Water: < 10% sea ice

<http://greenfleet.dodlive.mil/files/2014/02/USN-Arctic-Roadmap-2014.pdf>

. . . and their projected navigability in years ahead

There's really no territorial waters involved here. There is going to be ice. There's communications—all those kind of issues. We're not talking about the Northwest Passage. By that point we're not even talking, necessarily, the Northern Sea Route.

Nordic Orion is a bulk ore carrier. It is the first known commercial ship that did both the Northern Sea Route and the Northwest Passage in one year. It came out of the

Baltic, took the Northern Sea Route, went through the Bering Strait, picked up a load in China, went to Vancouver, and then came back to Scandinavia by the Northwest Passage. We've never seen that before. It's one ship, but it's a harbinger of where we're going.

Charting—if you think we have issues charting regular parts of the world, take a look at the Arctic. Infrastructure there is also limited. Imagine a U.S. map overlaid on the Arctic. Imagine if the president or Secretary of Defense said, "Hey, Admiral Greenert, why don't you take care of the Arctic? Oh, by the way, I'll give you one landing strip about where San Diego is on this overlaid map, and you take care of an area the size of the United States." That's kind of like what the infrastructure is right now. If you go up to Barrow, Alaska, there is no harbor. It's actually a spit of land, but they do have a landing strip.

It's a tough place to work. Communications are hard. And if we're up in the Arctic, some of our partners might ask, "Hey, if you're in the Arctic, who's in the Pacific? We don't see any more ships." It's a capacity issue.

IMPACT ON BASES AND SEA-LEVEL RISE

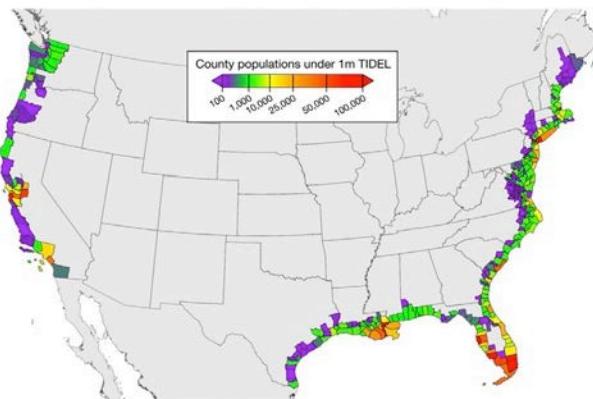
A lot of times, we think of our colleagues and friends in Bangladesh and India as having a tremendous sea-level rise issue. There are also strategic places we're interested in. I'll bet a lot of officers have been to [Diego Garcia](#). It's only about a meter or two above sea-level rise. It's a very strategic base that the British own and, very generously, allow us to use. So it's not just the places that we hear about in the media.

It is also a domestic issue, certainly for the United States, and any coastal country. The following is how many people in the United States live within a meter of high tide. It's more than just physically keeping the sea out of our bases. It impacts drinking water. It gets into aquifers. It impacts things like your sewer system and your drainage system.

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3.7M people within 1m of high tide



Benjamin H Strauss et al 2012 *Environ. Res. Lett.* 7

Approximately 3.7 million Americans live within one meter of high tide.

In some countries, the militaries are the engineering experts. How will they help respective places understand this and build for the future, not just for the past?

I often get asked, "Hey, the Netherlands has this figured out, so why don't we do what [the Dutch] do?" They have a very impressive system for managing water. They've done it for hundreds of years.

By the Netherlands' estimate, it will spend €100 billion between now and 2100 to further protect the coast. It's already starting from a good baseline. If I plotted the Netherland coast in the United States, it would cover Massachusetts and Rhode Island. So we'd be good right there, and maybe a little bit of Connecticut.

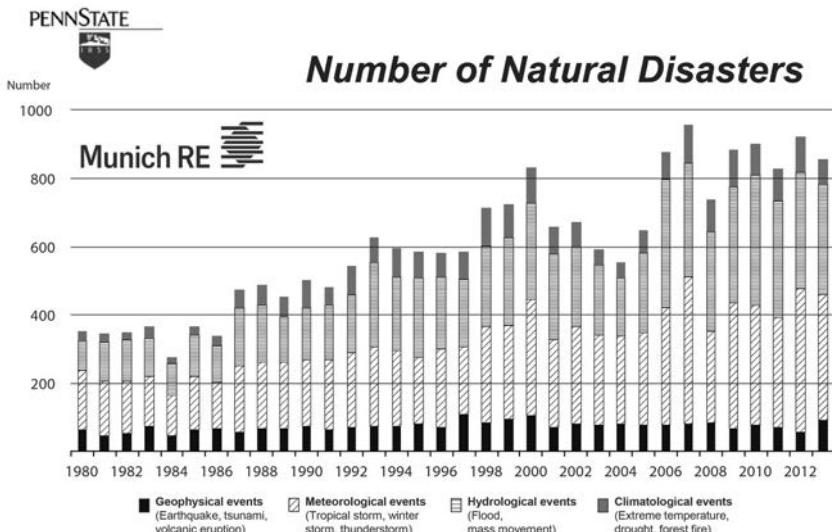
We're kind of out of money. That's probably not going to be an option for us to do around the entire United States.

DISASTER RELIEF

Some militaries have disaster relief pretty much as a primary mission. All navies do it when called on. Some of us probably build capacity. Some of us say, "Hey, we have war-fighting capacity, a lot of capacity. We're not going to build for this, but we're going to do it, when asked."

Disaster relief can be for some things that don't always get a lot of press, like the flooding in Thailand a few years ago. It can be for things that capture the world's attention, like Super Typhoon Haiyan in the Philippines last November. The United States was there, but the Japan Self-Defense Force deployed and helped and, of course, the Armed Forces of the Philippines.

A question that often comes up is, "Hey, this extreme weather, is it really increasing, or is it just because we have more people and they are living closer to the coast?" Yes, there are more people, and they do live more in urban areas, and closer to the coast. However, the following is a graph of natural disasters between 1980 and 2013, and comes from [Munich RE](#). The thing that's interesting to me is the geophysical



Graph depicting natural disasters between 1980 and 2013 indicates that geophysical disasters have remained constant, while weather and hydrologic disasters have increased.

disasters, indicated by [black], like earthquakes, tsunamis, volcanoes. It isn't going up. The [black] [geophysical disasters] is pretty much constant.

The [diagonal lines, horizontal lines, and gray] indicate weather and hydrologic disasters—a fancy way of saying water, droughts, and forest fires. Those seem to be going up. We're dealing with more of this, in an environment of more people, and more people living in disaster-prone regions.

HIGHER-ORDER SECURITY THREATS

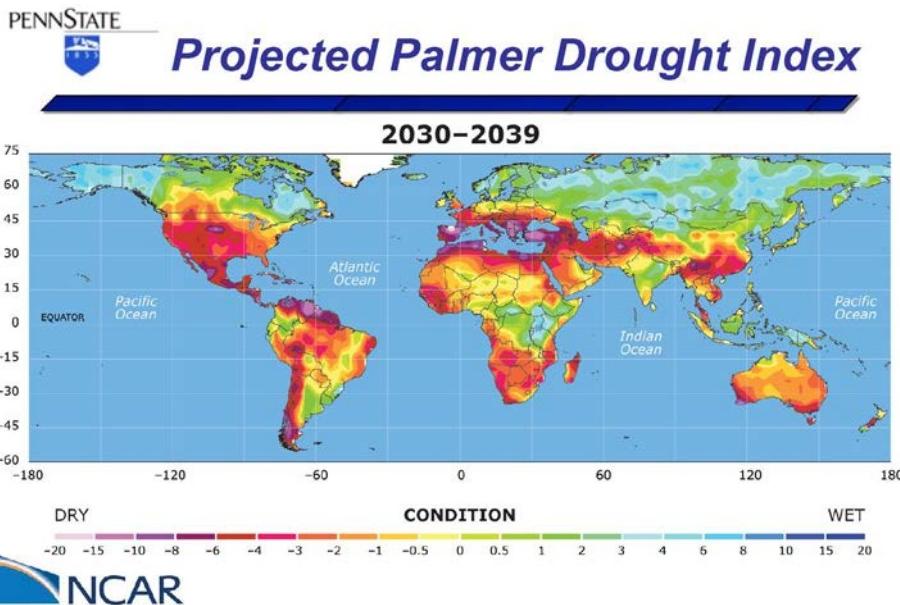
One of the things that we think of—maybe more than many because we operate on the ocean—is this acidification issue. Put more carbon dioxide into the atmosphere, and almost half gets absorbed. A series of chemical reactions take place, making the ocean slightly more acidic.

This gets back to that change thing. That change has occurred more in the last 150 years than the fish, corals, and all, have seen in several hundred thousand years. It's an open question as to how well ecosystems are dealing with this.

Why do we care? Two billion people get their primary protein from the ocean. If those food chains become imperiled, where are those people going to get their protein? We've already got a lot of stress on land-based agriculture, because of changes there. If you have a lot of hungry and unhappy people that usually ends up, in some shape or form, becoming a security issue. It's one of those underlying causes.

In general, we see the subtropics, both Northern and Southern Hemispheres, tending to dry out. In the following graphic, [darker areas] mean it's going to get hotter and drier. North of 40° to 45°, respectively, it actually gets wetter. On the edge, like where I live in Pennsylvania, it's a coin toss.

This is something we're going to have to deal with. We already see a lot of drying happening in the Middle East, Mediterranean, and southern Europe. Fortunately,



monsoons seem to hang in there. If they don't, that becomes an issue. In some parts of southern China and northern Indochina that could become an issue.

The following shows world food prices, 2008 to 2012, for primarily grain and wheat. They go up and down—not too surprising there. But some rates of change are fairly steep.

One reason that food prices, particularly wheat's, went up fast in 2010–2011 was big droughts. Forest fires in Russia we saw on the media impacted its wheat belt. Australia had big droughts at the time I believe Pakistan did as well that year. Three big wheat-growing regions had droughts at the same time. Supply goes down, prices go up.

PENNSTATE



Drought, Flood Impact Food Prices

Center for American Progress

World Food Prices, 2008-2012



World food prices correlated to world events

We can deal with that in a lot of places in the Western world. We've got different ways. We have income. We have governance. Some places, it's harder. There may be preexisting grievances and a lot of other factors, nothing to do with climate. In a lot of places it's like throwing matches in an area with gasoline vapors.

We have all had the experience, maybe unfortunate, of doing accident investigations. You find change and contributing factors. **Change in climate impacts food**, becoming one of those contributing factors.

Watch water. A lot of times, water has been used for collaboration, and I hope it continues that way. As water stresses tighten and populations grow, it will be important that we still collaborate, and we don't break down into a scenario of "what's mine is mine, and what's yours is mine."

WHAT CAN WE DO?

Many of us are engineers. We work with engineers. We have good engineering training. We look back over one hundred years of records. We add 10 percent, because we're good engineers. We add for safety, call it a day, and we're good.

We need to look forward as well, because those last one hundred years of records may not show what we're going to have for the next one hundred years.

These following publications are on the Internet. They're short and written in pretty plain English. They go through climate extremes and security. They will give you 90 percent of what you need to know.

- *Climate Extremes: Recent Trends with Implications for National Security*, by Dr. Michael McElroy, Harvard University, and Dr. D. James Baker, Former Administrator, NOAA.
- *National Security and the Accelerating Risks of Climate Change*, by Center for Naval Analyses Military Advisory Board.

Partnerships. This is an issue that you just cannot do by yourself. Task Force Climate Change worked with 450 people from different countries, organizations, academia, and different parts of federal and state governments. This is one of those unifying challenges that you build partnerships around, because it's in the best interest of us all to fix this. We know that partnerships work when everybody gets something out of the deal.

Just a couple of examples of that. There's the [Arctic Security Forces Roundtable](#). This started with an initiative by our Norwegian friends and [U.S. European Command](#). It has continued for about three years. In the 2014 Arctic Security Forces Roundtable, militaries and security forces talked about the common challenges and issues that we have to deal with.

Another example is Pilot Project–Norfolk, addressing sea-level rise. Norfolk is where the U.S. Navy has its largest naval base. U.S. Air Force assets are there, along with NASA, many other government assets, and about eight separate towns. Old Dominion University has said it will be the neutral party, trying to bring everyone together.

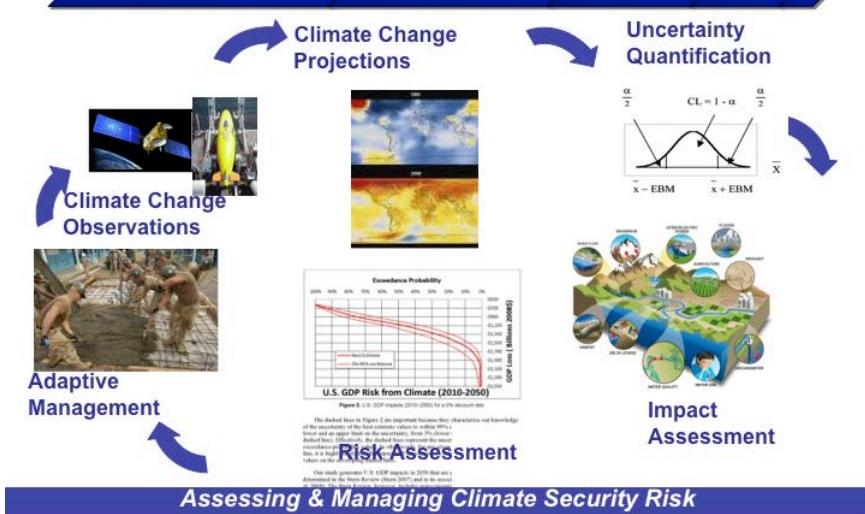
We all are figuring out how to deal with this. You can build a really big levee or dam around your base, but people live in town. Where's the power come from? Where's the sewer stuff going to? You can't look at yourself in isolation. If you do, you're just going to suboptimize. Norfolk knows that. [The people there] figured that out a long time ago. They're trying to build a team that comes up with a collaborative solution.

Improving Prediction Capability. There are some technical things we're doing. The Navy has been leading interagency collaboration within the U.S. government, such as how to make better predictions in times that matter, like in the next ten to fifteen years.

Adaptation Methodology. There are some fairly easy ways to put this together. You take what you know, you take the parts you're not so sure about, and you figure out what's most likely, what's most dangerous. You do a risk assessment. It can be simple, or it can be more quantitative. The hard part is doing something and making sure it made a difference.



An Adaptation Methodology



One way to deal with the effects of climate change is to make risk assessments based on known factors.

We do this for a lot of different things, and it is not anything new or different. People say, "We don't know anything." There's uncertainty, but we know a lot. The parts we don't know, we manage the risk. That's really all there is to it.

Leadership Counts. It's the CNO. It's the secretaries. [Vice] Admiral Mike Miller [United States] used to say, "If your boss is interested, you are fascinated." CNO sees this every day. When he's interested, tens, hundreds, and thousands of people are fascinated. These task forces would not have been formed, existed, or done work without the support of the CNO, or the Secretary of the Navy. None of that stuff would have happened.

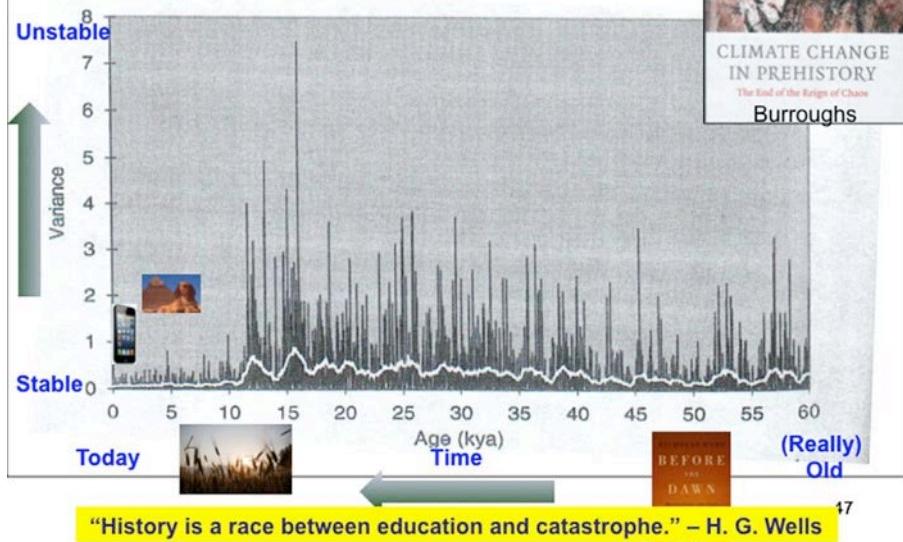
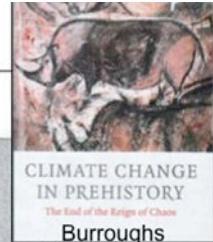
Learn from the Past. I wrote an [editorial in Science](#) over the summer about World War I and climate change. At first, it doesn't seem like there's a whole lot in there. As you read how the European powers got into World War I, there was a lot of hubris, a lot of ignoring data, and denial about what experts were telling them. It was [as if someone said], "Hey, boss, you might want to slow down." And it was [as if the reply was], "No, no, no. We've got this train schedule. It's got to run." And off they go. Four years later, 8.6 million soldiers have been killed.

There is a cost, if we don't figure this out, or if we just sleepwalk into some of these changes. I think we will figure it out.

The following graph shows climate variability over sixty thousand years. Black lines show how much climate varies, how much it's gone up and down, in centuries. Big lines indicate very unstable. Little lines indicate really stable. This gets back to what I showed earlier: lots of changes as we came out of the ice age. Then, it's like the climate flipped a switch and turned it off. Even things that we think were a big deal, like the medieval ice age, barely show up compared to what we know about the earth's capability to change.



60K Years of Variability



Graph showing climate variability over the last sixty thousand years

Nicholas Wade's *Before the Dawn*—it's paleogenetic stuff and pretty interesting. [Humans] all got the brains we have had about fifty thousand years ago, roughly. But we didn't get agriculture until eight thousand to ten thousand years ago. Then came civilization. Now we're carrying around iPhones. We have all this technology. If we had the brains then, why didn't we develop that stuff earlier? I would argue we were just trying to survive.

The issue is, how are we going to go, when we kick ourselves back into this?

Personal. I've talked a lot about this big-picture, strategic stuff. Let me make this more personal. When I was a commander, captain, and a one-star, we were down in Mississippi. That's where the U.S. Navy has its weather and oceanography headquarters, right on the Gulf of Mexico, in between Florida and Texas.

The following photo shows the remains of the house that I lived in. If you ever want to know what a nine-meter storm surge does, that house is an example. To this day, I have no idea where that darned house went. It either went onto the railway tracks two hundred meters north, or got sucked out to sea. I show that because as the seas come up, smaller and smaller storm surges are going to do this.

We were lucky. We had insurance and a support system. It's like—you figure it out. There are a lot of people in the world who don't have that kind of support system. If you take away everything they have, does that improve or worsen the security situation?

With apologies to Georges Clemenceau, climate security is far too important to be left to the environmentalists. This is a people issue. It's a security issue.

I said I don't believe in climate change per se, but I am convinced by the evidence. What I do believe is that America will figure this out. We will lead. We are a nation that, when focused, [you should] never bet against.



Remains of Rear Admiral Dave Titley's house after a nine-meter storm surge on the Gulf of Mexico

[Think] about the Apollo 13 astronauts—by all rights, they should have been dead. We refused to let that happen. You know the story—duct tape, cardboard, and baling wire—we got them back. When we get focused, we can fix anything. We'll figure this out.

As [it's often claimed Winston] Churchill said, "Americans can always be counted upon to do the right thing, after exhausting every other possibility." Maybe we're still exhausting some possibilities, but we're going to get there. Thank you very much.

DISCUSSION

Admiral Michelle Howard, United States:

We often talk about the ice in the Arctic. We don't talk about the weather. Can you talk about what the extreme weather is like up there, what the fog is like, and how much of the year? And if you believe storm systems are worsening, why would we not believe it's going to continue to worsen in the Arctic?

Rear Admiral David Titley (Ret.), United States:

It's a great question. I know Admiral Norman has seen this, Admiral Neffenger has seen this. As the waters open up, you are seeing not only storms, but storms having much more impact on waves, like those we deal with in every other ocean.

You're seeing, like for the coastal tides, huge erosion of shale, sandy, rocky beaches—not really hard beaches. They haven't had big waves for thousands of years. And they're just eroding back.

What we'll probably see, as far as storm patterns go, [is that] it will start to look like it's kind of enclosed. It's probably going to be like the North Atlantic in the winter. It's going to freeze over. In the summertime, it will be probably like 40° to 50° north, in the North Atlantic.

Periodically, you will get storms coming through on a relatively Mediterranean kind of scale. Think of the Mediterranean. It's a small ocean. Some of the biggest storms I've ever seen—wind, waves six, seven meters, maybe more—have been in the Mediterranean. You can build up a sea quite quickly. Then it's going to go down again. It would be just like operating in the Mediterranean, in wintertime in the Atlantic or Pacific.

In the U.S. Navy, we have something called “optimum track ship routing.” You keep ships and bad weather apart. Without harbors it gets challenging. Can we be good enough to do that up there? I would argue right now, we need to be better. Our skill is not as good, for a variety of reasons. Can we communicate up there? Do you have enough sea room to maneuver?

Rear Admiral Makbul Hossain, Bangladesh:

Thank you very much for an excellent presentation on a very important subject.

As a Bangladeshi, I can tell you that nineteen districts—there are a total of sixty-four districts in Bangladesh—in the coastal belt will go underwater with a one-meter rise of sea level. In those nineteen districts, 20 million people live. These people are not responsible for climate change, and Bangladesh is a small piece of land with 160 million people. It is a densely populated country, with 1,190 people per square kilometer.

The country is in very good health economically, but in days to come, climate change will really affect Bangladesh and other countries, like Maldives—the whole country will go underwater. Some parts of the United States, as you have shown on your map, will go underwater. But those countries [like Bangladesh] do not have enough space to relocate those people from the coastal belt.

Maritime leaders help some people instantly if there's a disaster, but these people are not in a disaster or an emergency. They are just slowly and gradually going underwater. What can the maritime community do for these people?

Rear Admiral David Titley (Ret.), United States:

I don't have a simple answer. I think it starts with a shared awareness. I also believe that forums like this, the International Seapower Symposium, allow people from many nations—in a very collegial, no-media, private environment—to form relationships. You're senior people in your countries; you can help your governments figure out what is the right solution.

These are challenges that we, frankly, have not had before in our civilization—countries literally going underwater. Admiral [Jack] Steer [New Zealand] is going to talk about that in the panel discussion and how New Zealand is looking at this in the South Pacific.

I wish I had a simple answer regarding either what the United States is going to do or what the answer will be. I think it begins with a shared understanding of the challenges, and then a shared understanding of the solution. We, as military

professionals, can contribute. We understand that if there isn't a civil solution then risks to the security of us all increase.

That's probably not what you were looking for, but that's where I see it.

Captain Marcelo Gomez, Chile:

Thank you for this great presentation. As you know, we live on the other side of the world. Do you have any idea how global warming is affecting the Antarctic Continent?

Rear Admiral David Titley (Ret.), United States:

The question is what's going on in Antarctica.

There have been a number of things that have been going on that are pretty interesting. Some warming that we're seeing—like on the Antarctic Peninsula—is almost as much as in the Arctic. For a variety of technical reasons, you tend to get more warming near the poles. You get more in the Arctic, because most of it is at sea level.

I think everybody knows the Antarctic has this very high elevation. It's a desert, basically, that has a very high elevation.

I don't think we're seeing a lot of change in the interior of Antarctica right now, but on the coast we're certainly seeing it.

There's also been some research done, I think two or three months ago, that basically said the west Antarctic ice sheet is on the move. It's not obvious that it's going to stop moving.

Don't take this the wrong way, but over centuries that puts four, five, six meters of sea-level rise into the system. That doesn't mean we've got to build for six meters in the next decade. It looks like, at least as far as science can understand now, it's irreversible. It looks like the ice sheet is moving. It's going to keep going. In two or three hundred years, we're going to start seeing these meter kind of changes.

Paradoxically, in wintertime in the Antarctic, you're actually getting greater ice, sea ice, forming, but then it melts faster in the summertime.

There's a lot of issues as to how this is impacting the food chains—one of the most important food chains in the world. It's the base for an awful lot of stuff.

There's a lot that's going on in the Antarctic. It's probably not as well studied as it should be. I can say that now that I'm in academia. It's like the first thing anybody from academia says: you need more research. I'm not doing the research, though.

There are some very big changes going on, and there's probably more work that needs to be done.

Admiral Bernard Rogel, France:

Thank you very much. In the next twenty or thirty years, what is your assessment about people moving, from south to north, due to climate changes? It's a very big question for us in Europe because of illegal immigration.

Rear Admiral David Titley (Ret.), United States:

My honest assessment—I'm not sure. Climate guys can tell a lot about the world in fifty years. It's much, much harder for the intelligence community to say and the reason it's harder is that they deal with people. People are hard to figure out.

There's been research that says that the people who are relatively well off and have the resources to move get out while the going's good. They move. And the people who have absolutely nothing tend to move. But there are a lot of people in the middle who try to hang on. What I see on climate migration, in general, is it's a lot more complex than most of us thought it was.

These are the kinds of issues that I would put into that security bucket.

Climate scientists can help inform about physical conditions and then work with agriculture. What are the agricultural conditions going to be? What are the local water supplies? People who study migration—anthropologists, sociologists, other disciplines, intelligence—need to take that information and come up with projections for their governments so we can figure out how to manage it.

I would put this as a moderate to moderately high risk. There's a lot that we don't know. Maybe we can reduce that risk if we understand more.

Vice Admiral Matthieu Borsboom, The Netherlands:

Excellent presentation.

To make my question personal, we live four hundred yards from the sea and below sea level.

What is striking in your presentation is that climate is, now, in its most stable period, looking back over sixty thousand years. At the same time, you show this video where we see ice in the Arctic changing very rapidly over twenty years.

If we start to plan, in a meteorological way, to counter all this, it's important to understand what could be the fluctuations, if not in the stable situation that we are now. If we ran that clip twenty thousand years ago, how would it look at that time is my question.

Rear Admiral David Titley (Ret.), United States:

How would we deal with these high climate variabilities is the question.

It's really the challenge. This goes beyond the security establishment. How do you stabilize the climate? What would be the first line of defense so that you don't have to deal with these very high variances?

How much variability we're going to get is, to some degree, an unknown. To the part of what we can get out of computer models—there's a saying in the weather and climate community that all models are wrong, but some are useful. Anybody who literally interprets those models is probably going to have a short but exciting career, because he or she is going to be wrong a lot.

What we can tell is the variability does seem to increase, hopefully not like that graph I showed—the variability coming out of the ice age. This is all coming out of the ice age.

When we put ourselves into this new, much warmer climate, we do seem to increase the variability. If we just let the natural system run by itself, we probably have about another fifteen thousand to twenty thousand years of stability before the natural cycles would put us back into an ice age. Fifteen thousand years is a lot of time, in people scale.

But the big questions are how much variability are we going to have to manage and how much of that do we not have to manage, because we won't see it.

Thanks very much.

Panel Discussion Three

Maritime Implications of Climate Change

Moderated by
Vice Admiral Mark Norman, Canada

Panel Members:
Rear Admiral Jack Steer, New Zealand
Vice Admiral Giuseppe De Giorgi, Italy
Vice Admiral Peter V. Neffenger, United States

Professor Thomas Mangold:

This starts our panel discussion on the maritime implications of climate change. Our moderator is Vice Admiral Mark Norman, Commander of the Royal Canadian Navy. He joined the Naval Reserve as a mechanic and then transferred to the regular forces as a surface warfare officer. He's had a variety of seagoing deployments, including command of HMCS *St. John's* (FFH 340) and the [Canadian Atlantic Fleet](#).

Ashore, he held a range of naval and joint staff appointments before assuming command of the Royal Canadian Navy last year.

Vice Admiral Norman will be joined, again, by Rear Admiral Dave Titley (Ret.); Rear Admiral Jack Steer, Chief of the Navy, Royal New Zealand Naval Force; Vice Admiral Peter Neffenger, Vice Commandant, U.S. Coast Guard; and Admiral Giuseppe De Giorgi, Chief of the Italian Navy.



Vice Admiral Mark Norman, Rear Admiral David Titley (Ret.), Rear Admiral Jack Steer of New Zealand, Vice Admiral Giuseppe De Giorgi of Italy, and Vice Admiral Peter V. Neffenger of the United States participate in the Panel Three discussion of the maritime implications of climate change.

Vice Admiral Mark Norman, Canada:

I start by acknowledging Admiral Greenert. Thank you, sir, for hosting us. To Admiral Howe and the entire team that has put this symposium together, it is a spectacular event. You should be very proud.

It's our intention to bring a variety of different perspectives, building on the presentation by Rear Admiral Dave Titley and some of the really good questions raised.

I am from Canada. What can I possibly offer to a discussion about climate change? I offer a couple of personal observations.

First, your impression of climate change obviously depends on where you sit. It was interesting to see some of the different questions and reactions. They reflect the fact that this is a global issue. People will debate whether it is a real issue or not. I tend to subscribe to the theories and science that we were presented with earlier.

But so what? How can I bring something to this? When I left Ottawa last week to go to Baltimore and then come here, it was about twenty-nine degrees Celsius outside. In our home, we have central air, because summers in Ottawa aren't that hot, routinely running in the midthirties. It was a typical September day, very nice and warm, but you could tell fall was in the air. I set the air-conditioning because I was going to be away and did not want to waste valuable energy.

I talked to the staff in Ottawa this morning. It's now zero degrees Celsius in Ottawa, as I speak to you. I'm not sure if that's climate change. I'm not sure what it is. I'm not really too impressed with what's going on, in terms of the weather.

The other thing—this isn't about the Arctic. Although I stand here with obviously some personal and professional interest and curiosity about the Arctic, this discussion isn't about the Arctic. You'll see from the panel, this is about what's going on around us, and the implications for military leaders.

I touch on a couple of quick comments made earlier. The first would be polar bears. Admiral Titley is right—it's not about polar bears, unless you're a nine-year-old child in [Churchill, Manitoba](#), a town of five thousand people, sitting on the west shore of Hudson Bay at 58° north. The town is being infested by the largest carnivores walking the surface of the planet, because their food supply is disappearing. It is about polar bears, if you are that nine-year-old child who worries, when going out to play, about becoming polar bear breakfast or dinner.

My [second] comment is about the overall environment. Admiral Neffenger is going to give us a great overview of some things ongoing in the Arctic.

My last comment—Admiral [Michelle] Howard [United States], you asked a great question about the weather and the implications of that. There are icebergs in the Atlantic and in the Pacific. In the southern Pacific, our friends who are here and work in that environment see large ice fields on a regular basis. Those of us working at the other end of the world see a growing number of icebergs making their way south into the sea lanes as they get pushed down through the west coast of Greenland and east coast of Canada.

This is real. It's happening. That gets to the points that Admiral Titley left us with: It's all about people and what this means to our populations. Fundamentally, it's the impact that climate change is having on 70 percent of the world's surface that we, as mariners, like to claim as our domain, that global commons that we talk about regularly. It's about water—saltwater, freshwater, solid water, and liquid water. Ultimately,

it's about change. One of the key takeaways from the entire discussion is that change is, in essence, the new normal.

The passage plan, if you will, will be led by Rear Admiral Jack Steer, head of the New Zealand Navy. He is speaking about the South Pacific perspective of climate change, and in particular the issue of rising sea levels and implications for populations in that corner of the globe.

Admiral De Giorgi then will talk about the implications and considerations of green fleets, what navies can do and are doing to address those important issues related to climate change.

And Admiral Neffenger will take us to the Arctic and talk about some of the issues that he has observed as an experienced commander both at sea and looking after large districts of North America from a U.S. Coast Guard perspective.

Rear Admiral Jack Steer, New Zealand:

Thank you. To the CNO, Admiral Greenert, I greet you and thank you. To all the chiefs who have flown here from around the world, I greet you all.

Climate change and its impacts on maritime security can be closer to home than we think—uncomfortably close. A few months ago I received a report looking at the effects of sea-level rise on our [naval base in Auckland](#). The report told the future of our navy's home out to 2100. It wasn't pretty. Some large chunks of our naval base will be subject to inundation. We have to start looking for mitigation measures.

In a very direct and local sense, climate change is going to impact New Zealand's maritime security, threatening the home of one of our main maritime security players. This is not totally surprising. The report highlighted that parts of the base are already struggling with high tides and storm events that, half a century ago, we wouldn't have considered a problem. While I was looking at the home of our navy, others are looking at their home as a nation.

SEA-LEVEL RISE—A VERY REAL THREAT

Global mean sea levels are rising and are predicted to continue to rise. Projected rates of global mean sea-level rise over the next century far exceed those observed over the last several thousand years. The potential exists for unprecedented impacts to the coastal natural environment and built infrastructure. Plausible scenarios estimate that, in certain regions, sea levels could rise by up to 1 percent by 2100 and by two meters if certain ice shelves continue to melt, especially in the Arctic.

Climate change, as we know, is about water: where it is, where it isn't, how much there is, how quickly it changes from ice to liquid and liquid to ice, how easily it's used, how easy it is to access, and, of course, what transit and resource opportunities arise from it.

Evidence of sea-level rise is strong. Satellite evidence suggests that over the Pacific, the rate of sea-level rise has almost doubled over the last two decades. We know that sea levels are rising. This maritime issue will directly influence the types of operations that our navies will face.

For the first time we face the real risk of losing a nation-state—an entire nation's home—to rising seas. In New Zealand, we are well aware of the dire challenges some

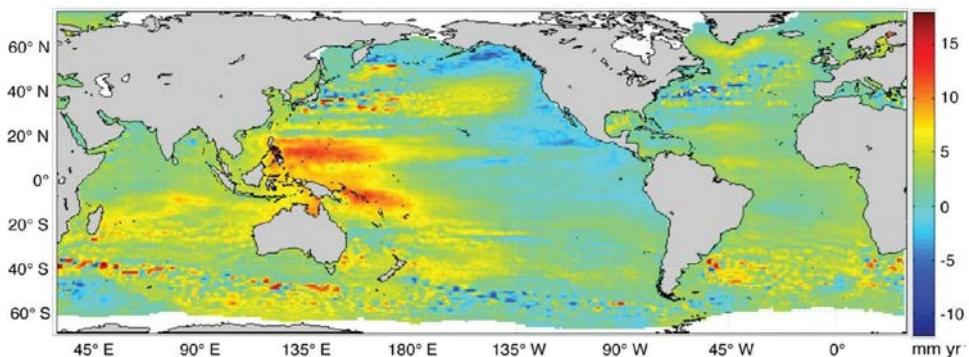
of our Pacific neighbors face in the near future. It is my intention to look at this from a South Pacific view.

Globally, we see the highest level of sea-level rise in the western Pacific region. The Pacific is, without a doubt, one of the world's most vulnerable regions when it comes to the risk of disaster due to climate change, particularly several low-lying coral islands. The [Tuvalu](#) and [Kiribati](#) islands lie barely five meters above sea level.

One of the effects of climate change is the dramatic revenue loss across sectors for these nations: agriculture, water resources, forestry, tourism, and other industry-related sectors. Annual losses have been estimated in billions of dollars for some of the world's smallest island nations.

The alarming thing about the following graphic is the fact that nearly 80 percent of the world's population lives within three-hundred kilometers of the coast, and that population is generally located in Asia and in the maritime continents.

GLOBAL MEAN SEA-LEVEL RISE



- Between 1993 and 2010 global mean sea level rose, with the highest rise in the Western Pacific.

Graph illustrating that the western Pacific has seen the highest increase of sea-level rise overall.

The issue of sea-level rise is a very real threat. It's not just about a few small islands. It is indeed the maritime century. I'm sure you'll agree with that, if only because the maritime domain is literally growing.

EFFECTS OF SEA-LEVEL RISE ON ISLAND NATIONS

Let's assess sea-level rise effects, in particular flooding, inundation, and erosion. Ten percent of the world's population lives on islands. The [Intergovernmental Panel on Climate Change](#) report noted that this population will experience the greatest challenges. Key environmental effects of sea-level rise include flooding, inundation, erosion, saltwater intrusion into the water table, ocean acidification, and warmer sea temperatures.

Of all possible impacts of climate change, predicted increase in frequency and intensity of extreme weather events in the western and South Pacific—where most of New Zealand's immediate interests are—presents one of the greatest operational risks

to our defense force and our navy's operational capabilities. Future decisions about the capability of our defense force will be driven by the effects of climate change in our region, to a certain extent.

As a quick case study, look at [Nuku'alofa](#), the capital city of the [Kingdom of Tonga](#) and home of the majority of its people. The following left image shows the current sea level in Nuku'alofa. In 1999, it was noted that a one-meter sea-level rise would see ten square kilometers of land inundated, and 14 percent of the population affected or made homeless on the nation's main island of [Tongatapu](#). Since then the population has increased. It is now estimated that a one-meter rise would displace over 25 percent of the population.

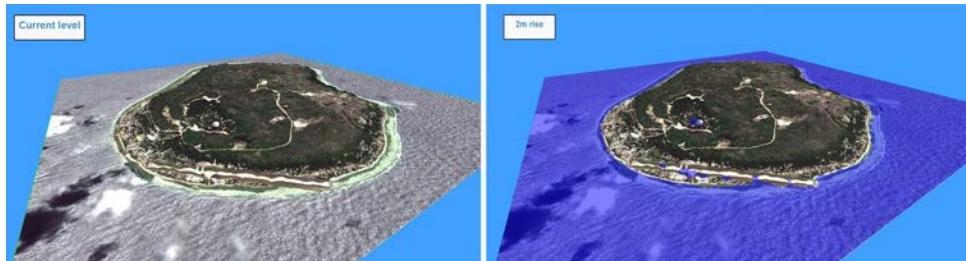


Left image shows current sea level for Nuku'alofa, capital of Kingdom of Tonga. Right image shows circled areas that would be affected by a one-meter sea-level rise. It is estimated that 25 percent of the population would be displaced by such a rise.

Not all of the Kingdom of Tonga disappears in the next hundred years, although it will certainly be faced with extreme challenges.

Other low-level islands would not be so lucky. [Funafuti](#), [Tuvalu](#), averages 1.5 meters above sea level. Sea-level rise, coupled with very low height, and therefore short return periods of storm surges, will make this island home uninhabitable.

One nation fighting for its existence is the smallest independent republic in the world, [Nauru](#). With a land area of twenty-one square kilometers, its highest point is sixty-five meters above sea level.



A two-meter sea-level rise would impact Nauru with flooding, damage to the infrastructure, and waterborne diseases

Sea-level rise is not expected to be that high, but we must also consider saltwater intrusion and inundation. Nauru is periodically affected by droughts. Freshwater is mainly created by desalination plants. Arable land is often destroyed and washed away during monsoonal rains. If we saw a two-meter rise in sea level, a realistic scenario, much of the coastal region would be at risk of tidal surges and flooding. Many areas at the center of the island would be below sea level. Vital infrastructures, such as the

nation's only airport, would be destroyed. Health issues, including incidence of water-borne diseases, would increase.

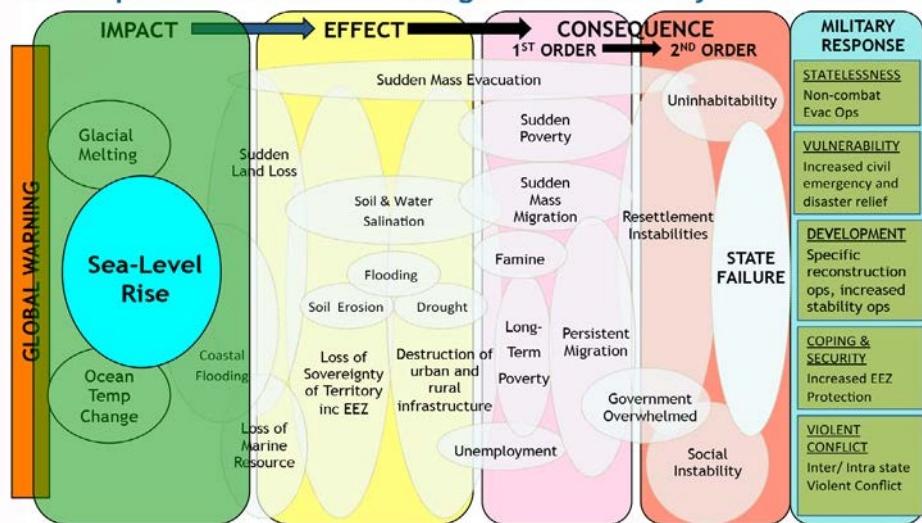
To complicate matters, as the global climate warms, it's possible that precipitation in Nauru could actually increase, potentially reducing droughts but increasing flooding. That would result in further contamination of its potable water supplies.

The outcome—increasingly, countries such as Nauru will require assistance with the provision of drinking water. Desalination plants require maintenance. When they break down the situation becomes critical very quickly.

MILITARY IMPLICATIONS

The following graphic shows the cascading consequences of climate change in the security environment. I've focused on global warming and sea-level rise. It's not exhaustive. The links are strong in some cases and weaker in others. Its purpose is to show the flow-on effects arising from climate change impacts and the types of operations where maritime and other military forces may be employed.

Consequences of Climate Change in the Security Environment



Consequences of climate change in the security environment

The effects flow into first- and second-order consequences, leading to military responses. [The chart] highlights the complexity of issues involved with sea-level rise, with wide and varied impacts on military operations.

Our military response options include noncombatant evacuation, where land may be permanently lost due to long-term flooding. These operations would be potentially on a mass scale and multinational in nature, and would most likely take a significant period of time.

More likely is the increased need for civil emergency and disaster relief following destructive weather events, such as tropical cyclones. This is the type of operation that our navy and defense force are preparing for now. Initial responses—we will

likely support reconstruction efforts. We will need to deploy engineers and the like for rebuilding national infrastructure.

A particular maritime security effect of sea-level rise is that of maritime territorial sovereignty with regard to exclusive economic zones (EEZs). Baselines used to define territorial seas in an EEZ may move, reducing sovereignty and decreasing exclusive rights to maritime resources. These can range from fisheries to oil and minerals.

The threat of inter- and intrastate violent conflict cannot be ruled out should climate change's political debate exacerbate existing tensions. Conflict is most likely to break out at sea [but] the maritime domain also offers the greatest opportunity for conflict avoidance. Maritime cooperation and confidence-building measures will become increasingly important in such a world, including opportunities to interact, such as at the likes of this symposium.

How are my navy—the Royal New Zealand Navy—and the New Zealand Defence Force going to respond to maritime challenges and interests in the South Pacific, which has been designated as our area of focus? We are working to develop a joint amphibious task force capability that, along with our allies, would deliver many of the response options listed on the previous graphic. Whether it's providing engineers to rectify a desalination plant or disaster relief following a tsunami or tropical cyclone, the navy, as transport and projection means, will be in a position to spearhead such operations and support the other services from the sea.

TAKEAWAYS

Climate change poses serious challenges. Indicators of climate change suggest multiple concerns for human and natural communities, especially Pacific islands. Warmer and drier conditions mean freshwater supplies will decrease on some Pacific islands, atolls. Low-lying islands are especially vulnerable to freshwater shortages, due to their small size and limited resources.

In particular, rising sea levels, exacerbated by storms, will increase coastal flooding and erosion, damaging coastal ecosystems and infrastructures and affecting agriculture, tourism, military bases, and other industries. Potential shrinkage of sovereignty and the impact on exclusive access to resources will have economic impacts, and could lead to conflict.

In 2007, the Center for Naval Analyses reported [in *National Security and the Threat of Climate Change*] the opinions of a panel of retired military generals. Their consensus was that global climate change presented a new and very difficult type of national security challenge. They asserted that climate change can act as a threat multiplier for instability in some of the most volatile regions in the world.

Just as importantly, implications for traditional lifestyles of indigenous communities may include destruction of coastal artifacts and structures, reduced availability of traditional food sources and subsistence fisheries, and loss of land bases [to] support Pacific island cultures. These losses will make it difficult for Pacific island communities to sustain their connection with a defined place and unique set of customs, beliefs, and languages.

Just as a small navy from New Zealand sees its very home being threatened by climate change and rising sea levels, so do small nations in the Pacific see the loss of theirs. The inconvenient truth is that a naval base is easier to relocate than a nation.

Vice Admiral Mark Norman, Canada:

Thanks very much, Admiral Steer. You gave powerful insights into very real scenarios—not theoretical—and some very important examples of the impacts of rising water levels. You spoke about your own infrastructure and the implications it has, the human impacts and geopolitical and security implications. Ultimately, as the panel, we are asking ourselves the questions: What are the expectations of leaders and our populations when faced with these types of scenarios? How are we going to prepare individually, bilaterally, multilaterally, and globally for these sorts of things?

[Here we have] a natural transition [to] Admiral De Giorgi's presentation. He will talk about some things being done and that can be done, relating to navies acting as good environmental citizens and as green fleets.

Vice Admiral Giuseppe De Giorgi, Italy:

Colleagues, distinguished guests. I thank Admiral Greenert for offering me the possibility to take an active part in this prestigious forum.

I will brief about the initiatives we are undertaking to try to contribute to more sustainable growth, from both the economic and environmental perspectives.

**CARBON EMISSIONS REDUCTIONS—
INTERNATIONAL, EU, AND ITALY'S TARGETS**

Today's national and international scenarios are uncertain and unpredictable. The economic crisis affecting all Western economies is not yet over, and my country is one of the hardest hit.

At the same time, globalization and unprecedented development of many emerging regions throughout the world are exerting growing pressure on the environment, due to uncontrolled increase in energy demand, now around 12 billion tons of petroleum equivalent. By 2030, it could rise about 35 to 40 percent, shifting primarily to Asia.

Results are evidenced by the rise of raw material prices and unprecedented increase of carbon dioxide emission levels, causing a dangerous concentration of noxious gases in our atmosphere, with catastrophic global effects.

Over the last century, the atmosphere has warmed an average temperature of 0.85 degrees, amounts of snow and ice have diminished, sea level has risen, and the concentration of greenhouse gases has increased. The effects of these changes can be seen all over the world and are starting to affect even countries like Italy, well known for its mild climate.

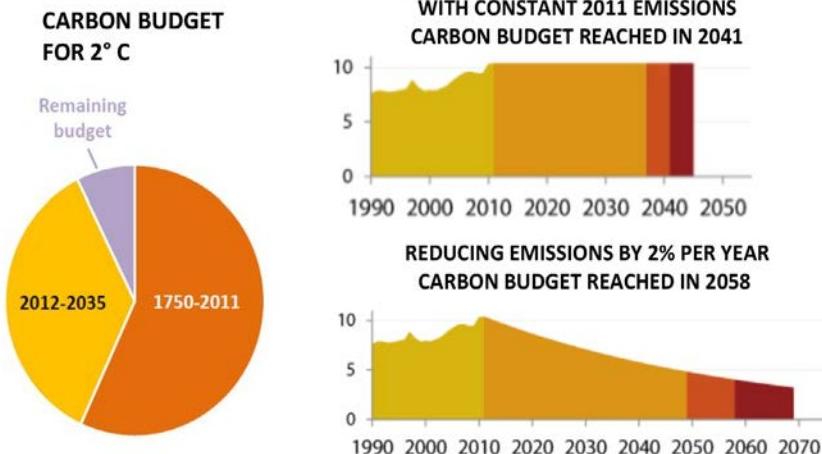
National energy policies, currently under discussion, are insufficient to limit the long-term global average temperature increase of two degrees Celsius above pre-industry levels.

The following target, which governments agreed on, represents the benchmark by which nations have decided to measure our collective success in providing generations to come with a secure climate future. At [our] current rate of CO₂ emissions, about ten kilotons per year, we will pass the two-degree carbon budget in less than fifty years.

Our society is now suffering the consequences of this problem, underestimated and not tackled appropriately until now. It is evident that we cannot reverse the situation until we change our behavior toward a more rationalized and efficient use of energy



The "Carbon Budget" for 2 °C



Source: Intergovernmental Panel on Climate Change – *Climate change 2013*

A depiction of the benchmark by which nations will measure collective success for reducing emissions

and invest more resources in new technologies. This two-degree target will still remain technically feasible, but effective actions must be taken as soon as possible.

In 2008, the European Union (EU) approved the [Climate and Energy Package](#), known as the “20-20-20 package,” setting the following energy and climate targets for 2020:

- Reduce EU greenhouse gas emissions from 1990 levels by 20 percent.
- Raise the share of EU energy consumption from renewable sources to 20 percent.
- Improve EU energy efficiency by 20 percent.

In compliance with EU legislation, [Italy's National Energy Strategy](#) of 2013 clearly sets out the main goals to be achieved in the coming years. By 2020, Italy will reach the targets set by the EU for more competitive and sustainable energy.

NEED TO REDUCE MARITIME TRANSPORTS' CARBON EMISSIONS

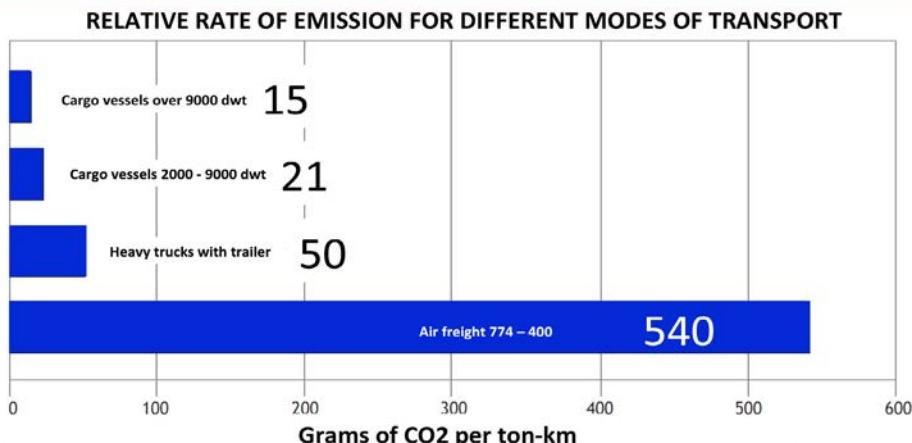
I shift the focus to maritime transport. Maritime transport is vital to the world’s economy. Over 90 percent of the world’s freight is shipped by sea. Furthermore, this remains the most cost-effective, environmentally efficient, and sustainable means for globally shipping goods and raw materials.

To prove its environmental efficiency, think about shipping one ton of goods by sea for one kilometer. It produces only 30 percent of CO₂ emissions compared to that produced by land transport carrying the same load over the same distance, and less than 1 percent of that produced by air.

While maritime shipping may be the most emission-efficient form of transport, it represents a large share of global CO₂ emissions, about 3 percent, due to the volume of goods transported by sea. [A recent report by the EU Environmental Agency](#) shows



Global Maritime Transports



Source: International Center for Trade and Sustainable Development – *Transport, trade and climate change*

While maritime transport is the most emission-efficient mode of transport, it represents a large share of global CO₂ emissions.

that greenhouse gas emissions produced by ships leaving EU ports have increased by almost 35 percent between 1990 and 2010.

In 2008, through the last revision of the **MARPOL Convention** [International Convention for the Prevention of Pollution from Ships] and amendment of Annex VI, the **Maritime Environment Protection Committee** imposed more stringent limits on emission of the main air pollutants in ship exhaust gases and prohibited deliberate emissions of ozone-depleting substances, especially in the so-called emission-control areas, depicted in the following graphic.



MARPOL Limits to Ships' Emissions

MARPOL Annex VI: Prevention of air pollution by ships		EMISSION CONTROL AREAS (ECA)
(Emission Control Areas/in effect from)		
Baltic Sea (SOx)	19 May 2006	
North Sea (SOx)	22 Nov 2007	
North American (SOx, and NOx and PM)	1 Aug 2012	
United States Caribbean Sea (SOx, NOx and PM)	1 Jan 2014	
		<ul style="list-style-type: none"> ■ EXISTING ECA ■ FUTURE ECA

In 2008, MARPOL imposed strict limits on air pollutants in ship-exhaust gases, and prohibited deliberate emissions of ozone-depleting substances, especially in the so-called emission-control areas.

Additional measures were approved in 2011 by the [International Maritime Organization](#) (IMO) for the purpose of stimulating technical development and innovation of all components influencing a ship's energy efficiency from its design phase. Under these premises, EU and IMO efforts are currently focused on regulating the sector, and exerting growing pressure on oil companies to research new and efficient alternative maritime fuels. The following graphic shows fuel efficiency increasing over the years for different classes of ships.



Italian Navy's approach to ship eco-design



$$\text{Fuel Efficiency Design Index} = \frac{\text{CO}_2 \text{ EMISSION}}{\Delta_{\text{Full load}} \cdot \text{Ship Range}} \left[\frac{\text{gr}}{\text{ton} \cdot \text{NM}} \right]$$

[gr CO ₂ /ton NM]	
PERRY (70')	87
MAESTRALE (80')	56
ÁLVARO DE BAZÁN (TODAY)*	36
TYPE 45 (TODAY)*	45
FREMM (TODAY)	43
PPA (FUTURE)	36
TYPE 26 (FUTURE)*	36
F-125 (FUTURE)*	39

* OPEN SOURCE DATA, BASED ON DIESEL ENGINES PROPULSION

The fuel efficiency of Italian Navy vessels has increased over the years.

Besides environmental aspects and connected regulatory trends, other significant factors are driving the adoption of alternative fuels. With oil prices experiencing long-term upward price pressure, governments will seek to significantly reduce dependence on petroleum by pursuing new energy solutions.

While ground transportation is slowly changing its attitude toward use of new products, the maritime sector remains anchored to the past. Nevertheless, history has shown that the maritime sector can easily adopt new fuels, should incentives be in place. For instance, between 1914 and 1922, the percentage of vessels using oil rather than coal increased from 3 percent to 24 percent. The same could happen today, if biofuel prices shifted through large-scale production supported by governments, with benefits and incentives for using low-carbon energy sources.

What can we do to support this process? Despite the absence of tangible military benefits in the near term, use of alternative fuels could bring important strategic paybacks. If our national defenses encouraged early production, government decision makers, technology developers, and investors would obtain knowledge about the technical, financial, and environmental aspects of alternative fuel options. This could lead industry to produce strategically significant amounts of alternative fuels in our countries. A large, commercially competitive alternative

fuel industry would reduce dependence on petroleum and foster reduction of oil prices, with strategic and economic benefits.

NAVIES CAN DRIVE CHANGE

Navies can be relevant in the development, qualification, and certification process of these new products. Historically, they have been the precursor for new technologies and perfectly fit this job. All fuels to be used by military forces must meet specification for handling and use, so as to be safe and reliable in high-stress environments.

Two types of alternative fuels have emerged as near-term candidates for military applications: fuels produced via the method known as **Fischer-Tropsch** synthesis and fuels produced by processing vegetable oils and animal fats with hydrogen. Betting on this latter method, the Italian Navy recently started collaborating with our national oil company, ENI, in the field of new-generation biofuels.

In 2009, ENI and America's Honeywell UOP developed a state-of-the-art, hydro-treated, drop-in fuel called "**green diesel**," using vegetable oils and tallow oil. To achieve this, ENI and UOP have attempted a specific and viable technology called **Ecofining**.

Biomass affords the possibility of fuel production at life-cycle greenhouse gas emission levels significantly below those produced by conventional fuels. This is because carbon dioxide released into the atmosphere during liquid fuel production, distribution, and combustion in a ship or aircraft is compensated for by removal of about the same amount of carbon dioxide during growth of the biomass used to make that fuel. I'm talking about a zero-sum process.

Large-scale commercial production of green diesel started in 2014 in the **ENI biorefinery** located in Venice. It is the first oil refinery in the world converted into a biorefinery. It will produce three hundred thousand tons of green diesel,

Green F-76

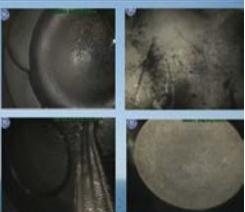


Italian Navy

Certification on ITS FOSCARI

Green F76 certification process was successfully completed last January 29th when the Italian Navy OPV FOSCARI, first military ship in Europe, sailed using this blended fuel.

A subsequent inspection found the engines to be cleaner than when operating on straight fossil F76.

Italian Navy Patrol ship Foscari (P 493) was the first European military vessel to sail using the blended, cleaner fuel known as Green F-76.

annually. Feedstock for the green diesel plant is composed of palm oil from certified, sustainable supply chains.

In 2012, ENI and the Italian Navy started collaborating on producing a new brand of Green F-76, which came from blending 50 percent of green diesel and 50 percent of fossil F-76. This fuel mix is an ultra-low-sulfur blend—less density than the F-76—complying with the most stringent EU emissions rules and grants, and will have 50 percent more potential carbon footprint reduction over its entire life-cycle, compared to F-76. There is also a possibility of producing high-quality jet fuel because of the blend's high cold-weather performance.

Green F-76 certification process was successfully completed last January. The Italian Navy patrol ship *Foscarini* (P 493) [sailed using this blended fuel](#), the first military ship in Europe to do so. Subsequent inspection found the engines to be cleaner than when operating on straight fossil F-76.

Finally, last April at ENI's Porto Marghera biorefinery facilities, I signed an agreement with Secretary of the U.S. Navy Ray Mabus aimed at starting collaboration within our navies on green fuel test and production. It is the first step toward production of green fleets.

How much land do we need to produce green diesel? Suppose we want one hundred thousand tons of blended fuel. It comes from a ten-square-kilometer plantation field growing oil palm trees, or from twenty-three kilometers growing rapeseed. Each can produce fifty thousand tons of green diesel, the component to be blended with the other fifty thousand tons of fossil fuel.

ENI is already moving toward the so-called third-generation biofuels, setting up a new microalgae testing plant in [Gela](#), in the south of Sicily. In large pools, algae are fed CO₂ coming from exhaust gases. The area required for algae cultivation is estimated to be significantly smaller than any other biomass source. On average, ten thousand square meters of algae cultivation will potentially produce fifty cubic meters per year of green diesel. That is ten times more than the amount extracted from palm oil.

Third-generation biofuels are still far away from large-scale production. But together with the second generation—one derived from a wide array of feedstock, ranging from lignocelluloses to municipal solid waste—they could help reduce ongoing debate over the impact of today's biofuels on food costs and its shortages.

EXPECTATIONS AND FUTURE COMMITMENTS

What are the results we expect coming from the use of green diesel? The following graphic indicates expected fuel efficiencies.

Let's talk cost. The price of one ton of palm oil is roughly U.S.\$600 to U.S.\$700. Some months ago, it was more than U.S.\$800. Currently, the blended diesel cost is higher than the conventional, 20 to 35 percent more, depending on the amount of green diesel in the blended fuel. ENI is confident that with the downward trend in the price of palm oil and larger-scale production, and without significant increment in the oil price, the existing gap will further decrease in a couple of years.

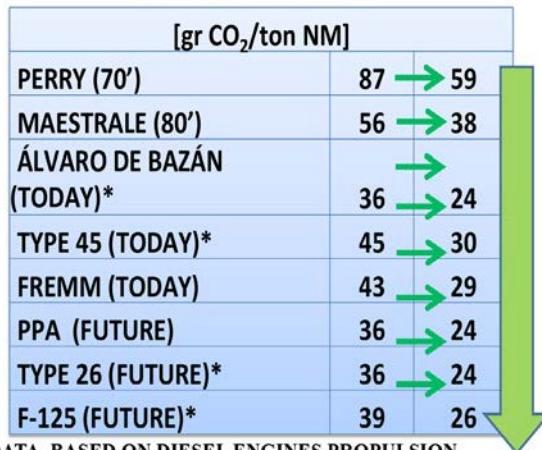
The Italian Navy foresees several steps reducing costs and pollution. They include energy requalification for all existing units and construction of new ships fitted with hybrid eco-propulsion plants, able to use both traditional and advanced biofuels.

Italian Navy's approach to ship eco-design



$$\text{Fuel Efficiency Design Index} = \frac{\text{CO}_2 \text{ EMISSION}}{\Delta_{\text{Full load}} \cdot \text{Ship Range}} \left[\frac{\text{gr}}{\text{ton} \cdot \text{NM}} \right]$$

An example of fuel efficiency increasing over the years... boosted with BIOFUELS



* OPEN SOURCE DATA, BASED ON DIESEL ENGINES PROPULSION

Fuel efficiencies expected to result from the use of green diesel

These are our commitments for the future. By the end of this year, our fleet will be certified with the new Green F-76, classified as green, and fully compliant with the most stringent EU emission rules. By 2016, supporting the U.S. Navy initiative [Great Green Fleet](#), the Italian fleet will conduct a large naval demonstration in the Mediterranean Sea with up to 50 percent of its total energy coming from alternative fuels.

By 2020, the Italian fleet will reduce oil dependency up to 50 percent. Italy and the Italian Navy are determined to contribute. The challenges in this new field require strong, common commitments, as well as significant transformation of the energy system. This not only involves the energy sector but also requires a cultural shift in maritime leadership.

Vice Admiral Mark Norman, Canada:

Thank you, Admiral De Giorgi. You highlighted a series of actions that are being taken. They are not theoretical. They are actually happening. The Italian Navy is demonstrating real leadership in looking at measures that are positive and that can have a very positive impact globally.

If you're not compelled by environmental impacts of what you just heard, then I would submit to you that if you go back to discussions about energy security, these measures could potentially be a win-win. A zero-sum situation is not necessarily negative. In this case, it can be very much a positive and is certainly very interesting.

That brings us to Vice Admiral Peter V. Neffenger, with his experience as a Coast Guard officer, running the largest inland waterway in the world, and also operating in the Pacific and certainly with experience in the Arctic.



Secretary of the U.S. Navy Ray Mabus and Vice Admiral Giuseppe De Giorgi of Italy sign agreement to collaborate on the testing and production of green fuel.

Vice Admiral Peter V. Neffenger, United States:

Admiral Greenert, thank you for the opportunity to speak. Heads of navies, coast guards, and distinguished colleagues, it's a pleasure to be here, to share thoughts on what we're seeing regarding the maritime implications of climate change as we look to the Arctic.

As I look back over this symposium, we talked about challenges that all of us face, ensuring safety and security of our maritime regions. We've talked about piracy, transnational crime, maritime smuggling, illegal migration, cyber security, changes in commercial shipping. All of these challenges strain our resources and test our capabilities.

Perhaps the most unique challenge we face is that of a changing climate, and it's because of the variability and unpredictability that it injects. It's no more evident than when you look to the Arctic. It's no longer an academic discussion. This is a place where we have to operate.

A former commandant of ours, Admiral Thad Allen, was testifying before a Senate committee a number of years ago. He was asked whether he believed in climate change. His answer is one that I've always liked. He said, "I'm an operator. I'm generally agnostic as to the cause of climate change. I just know when I look at the Arctic, there's water where there used to be ice. You're going to expect me to go there and find out what's happening."

That's really where we find ourselves in the U.S. Coast Guard. We find that open water attracts humans and activities associated with humans. Where that water is under U.S. jurisdiction, the Coast Guard has a responsibility to be there. So, it's incumbent on us to understand what the mission demands are going to be.

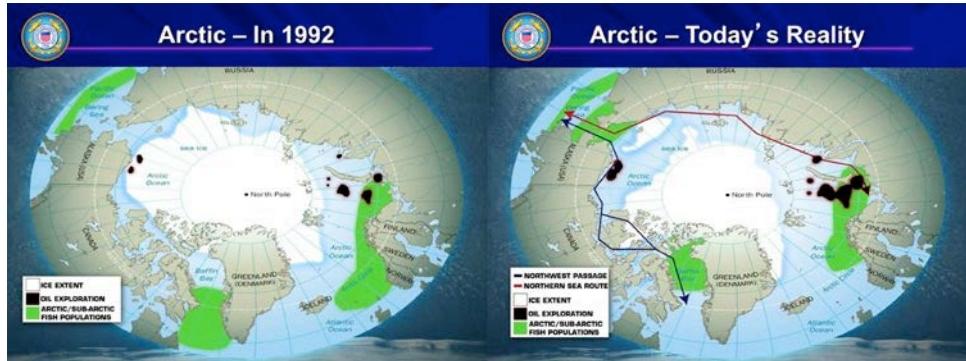
THE ARCTIC AS A “TELLTALE” FOR CLIMATE CHANGE

Those of you who are sailors know a “telltale” is that strip of cloth you put on a sail to determine when the wind starts to shift. It tells you when you should begin to trim your sails.

The wind is shifting. As we look at the Arctic, we see a telltale. A little fluttering is beginning and it’s signaling some of the changes happening elsewhere.

The reason those changes are so interesting is the human activity I mentioned. It’s increasing up there, because there’s promise of economic gain. Wherever there’s promise of economic gain, we find people going there.

I’m going to cover, very quickly, some of the same information that Admiral Titley covered far more adequately. The following graphics are snapshots of the Arctic in 1992 and 2012.



Graphics depicting the Arctic in 1992 and 2012 show that exploration has resulted in increased known areas of oil and gas reserves.

The graphic of the Arctic in 1992 shows known reserves of oil and gas in black, observed maximum ice extent, and locations of large fish biomasses. Shift to the Arctic in 2012 (right graphic). It shows the maximum ice extent. It doesn’t show the same variability that the animation did. But we’ve added the additional known oil and gas reserves. You can see there’s significantly more than the previous. This is recognition of exploration that’s been done.

The graphic of the 2012 Arctic shows movement of fish stocks into colder Arctic waters—actually, warmer Arctic waters. Those cold-water fish seek the temperature range that they like best. [The lines] across the top of this 2012 graphic are the Northern Sea Route along the Arctic coast of Russia, and then the notional Northwest Passage across North America.

As Admiral Norman and I discussed, the Northwest Passage is more of a romantic vision than an actual passage—something that really challenges your navigational skills and your trust in the very small number of charts that are available.

Vice Admiral Mark Norman, Canada:

The one-hundred-year-old soundings often resulted in people’s deaths in the Northwest Passage.

Vice Admiral Peter V. Neffenger, United States:

Exactly. The other thing that we noticed is that as this icecap begins to melt, ice is moving around more. It's moving to our side of the Arctic, opening up the Arctic coast along the coast of Russia. So, the Northern Sea Route and potential transpolar route are very real possibilities.

Also, that opening ice is allowing coastal erosion in a way that we haven't seen before. There are a number of villages in northwest Alaska that have experienced severe shoreline erosion, rapid erosion because of the relative instability of the tundra.

This is a new and serious problem, one they never had before. It's damaging shoreside infrastructure, sea-bottom habitats, and new shore fisheries. In fact, some villages will likely cease to exist within the next ten years because of the rapidity of that erosion.

Those storm surges, Admiral Howard, that you asked about are very real up there. Although infrequent, when they do hit they cause significant damage.

INCREASED HUMAN ACTIVITY IN A CHALLENGING PLACE

I also noted that the open Arctic Ocean promises new economic opportunities. Human activity that we're seeing increase in the region falls into three general categories.

- Resource extraction: You see interest in oil, gas, and mineral, much of it offshore. There's also a fair amount of nickel subsurface. Some large nickel-mining entities are looking at what they could do with subsea mining.
- New maritime trade routes: There are opportunities, as you can see. You can cut significant time off transit from Europe to Asia if you had an open-water transit across the pole.
- Maritime ecotourism: This is probably the one that most concerns those of us who respond to emergencies. We've seen a dramatic increase in the number of people going up, either for romantic reasons, to look at polar bears and indigenous populations, or just to see what it looks like, now that they can get there.

Resource Extraction. I mentioned that here are large resources. Some 30 percent of the world's undiscovered gas and 13 percent of the world's undiscovered oil are beneath the Arctic seabed.

Shell Oil, in 2012, drilled exploratory wells off the northwest coast of Alaska. It was a challenging operation. What they found is that it's still pretty hard to operate there. It's a remote region. You're about two thousand nautical miles from your nearest deepwater port, in [Dutch Harbor](#). It's significantly challenging to get infrastructure up there. It's hard to build infrastructure on tundra. It's difficult to maintain it, once you're up there.

Nonetheless, some three thousand people moved into the small town of Barrow, Alaska, over the summer of 2012. During that summer, Shell Oil was transiting three hundred people per week in and out of Barrow to the platform about forty miles offshore.

We conducted twenty-eight search and rescues just in conjunction with that operation. There were thirty-two vessels operating in and around that platform. The ice was shifting and moving so they were constantly moving those vessels in and out. We had twenty-one of our own vessels and aircraft up there, as well.

It is a very challenging place to operate. We found it challenging with respect to communications. We had to set up temporary communications facilities. We found it challenging with respect to keeping aviation fuel from gelling [while] flying at altitude. So, this is not an easy place. It's still a remote region. It's still a very unforgiving region. But it's attracting a lot of attention.

New Maritime Trade Routes. From 2008 to 2012, traffic through the Bering Strait increased by 118 percent. That sounds big; however, the numbers are still small. We looked at about fifty vessels in 2012 that came through the Bering Strait. Not all of these are transpolar crossings. Most are local. But most are tank vessels carrying crude oil, natural gas, and the like.

All are moving through the very narrow strait, where we know that the potential for catastrophe is high. Those who work in the maritime [sector] know that it's only a matter of time before you have a casualty. As traffic increases through the strait, we suspect that we will see the potential for casualty increase.

We don't have adequate facilities or capabilities for cleaning up oil in ice. We haven't really thought about what it takes to do that. Some of the nations in this room have. But none of us have figured out how we would operate, collectively, in the Arctic, nor how we would get materials needed up there.

Think back to the large oil spill in the Gulf of Mexico in 2010. If you had to have an oil spill of that size, that's probably the only place in the world you'd like to have it. You're close to lots of capability, lots of supply, and a lot of resources. That was a very challenging response: over fifty thousand people responding for the better part of a year and a half. It's actually still going on.

If we were to have something—even 10 percent of that—in the Arctic, it would test all of us in a very challenging way.

Maritime Ecotourism. Just this summer, we had to divert one of our icebreakers to rescue a guy [who] was in a thirty-six-foot sailing vessel, attempting to make that Northwest Passage crossing single-handed. What he found is that open water doesn't mean ice-free water, and ice-free doesn't mean without ice movement.

This was a challenging rescue. We diverted USCGC *Healy* (WAGB 20), one of our icebreakers that was up there on a scientific mission doing hydrographic research as well as oceanographic research for the [National Science Foundation](#). It took about five days to get to him. It took about five days to tow him out of there. We thought about leaving the vessel behind, but that posed other challenges. We towed him out at about two knots over the course of time. We had to continually drop tow, break a new channel, pick the tow up, and bring him out of there.

Imagine if that was a large cruise ship. This is not an academic discussion. There was recently an advertisement in the *New York Times* for a thirty-two-day Northwest Passage cruise next summer, on a ship carrying as many as a thousand passengers. It's a U.S.\$20,000 trip if anyone's interested.

The average cruise ship passenger who has that kind of money to spend is usually not a young, hale, in-shape individual. We're probably going to be pulling a lot of elderly people off of the ship in the middle of that next summer if we have a problem. I don't know that any of us have the ability to rescue that number of people in an unforgiving environment like this.

SIGNIFICANT COMPETING CLAIMS IN THE ARCTIC

The following chart illustrates—it's not definitive by any means—just a few of the areas in competition for claims, ownership, or interest. You see the dotted line indicates the extent of the exclusive economic zones. The [diamond-shape] lines indicate equidistant lines between nations. You can see there are disputes as to where that is. Even with our good friends in Canada, we've had some dispute as to whether that line is in the right location.



Illustration of the competition for claims, ownership, or interest in the Arctic

All of that becomes very interesting once you access the region. Before it was interesting to lay these down on a chart of a region where only explorers and polar bears played. That represents several hundred thousand square miles of potentially disputed area.

U.S. COAST GUARD ARCTIC STRATEGY

What does that mean for an operating agency like the U.S. Coast Guard and those who are Arctic nations, or have an interest in the Arctic? In addition to being a military service, we're also a maritime law enforcement agency for the United States. Wherever there is human activity on the water, we have oversight responsibilities.

In May 2013, we published the [United States Coast Guard Arctic Strategy](#). This outlines our near-term approach to meeting what we saw as growing mission demand,

being generated by activity in the Arctic. It complements the *U.S. National Strategy for the Arctic*.

The *United States Coast Guard Arctic Strategy* envisions a safe, secure, and environmentally responsible maritime region. It proposes a mobile, seasonal Coast Guard operational presence to meet mission demand. I say mobile and seasonal, because as Admiral Norman pointed out, it's pretty dark up there for the better part of half a year. Then it gets pretty exciting for three or four months and goes dark again.

We're looking at ways we can operate during those few light months. There are three lines of effort.

Improve Awareness. We need to understand better what's happening there. We have very little awareness of activity, certainly on a daily basis. We can do it after the fact. We can look behind ourselves and see what's happened. But if you're an operating agency and need to respond to something, you need real-time information.

Modernizing Governance. What we mean by that is—in addition to standard laws that we all have delineating our responsibilities and jurisdictions in our waters—there are a lot of areas under dispute.

There's tremendous interest in the seabed. Under the *Law of the Sea Convention*, countries who are signatory—we are not—can make claims to extend their outer continental shelf. Many nations around the Arctic are doing so. They're mapping out their outer continental shelves and extended claims. All of that has yet to be determined. We also don't have agreed-on traffic management schemes. Actually, we don't have any to speak of at all. We've done a number of studies. We're working with our Arctic-nation partners to look at that.

Broadening Partnerships. If you're going to improve awareness, if you're going to understand how to govern yourselves, you need to do so with others.

U.S. COAST GUARD INITIATIVES SUPPORTING ITS ARCTIC STRATEGY

We have an implementation plan. We've got a number of initiatives that support objectives. I'll just highlight a couple. They involve not just our U.S. partners but international partners. We work very closely with the other *Arctic Council* nations' navies and coast guards.

One initiative that we put forward is an Arctic Coast Guard Forum. This would be for Arctic nations' coast guards or navies to work together on issues with respect to awareness and governance. Most importantly, forum participants would think about how to put into practice two agreements that were signed by the Arctic Council: the Arctic Search and Rescue Agreement and the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic. They're good agreements. We have no idea how we're going to implement them. We need to sit down as respective agencies and think about how we would do that, what are the implications for that, how would we share information, what resources are available, how would we activate those resources, and what kinds of mutual cooperative agreements could we have? We think an Arctic Coast Guard Forum would be a useful way to begin discussions.

In conjunction with that, we'd like to see development of a coordination center of some sort, likely virtual at first. It's difficult to figure out where you'd put one, physically, but you can do a lot of virtual coordination with respect to that.

We're also opening, this week, a [Center for Arctic Study and Policy](#) at our [Coast Guard Academy](#), just an hour drive from here, in New London, Connecticut. The purpose of that will be to focus on maritime operational activity and how we apply policy decisions to operational activity.

There are a number of other things that we're doing, including engagement with the Arctic Council. The United States takes over chairmanship of the Arctic Council in the spring of next year, following Canadian chairmanship. We're looking to tie a number of these initiatives to that chairmanship.

A [Polar Code](#) implementation—it's important that if more vessels operate up there they do so in a safe and responsible manner, they're constructed to withstand ice impacts, and they're operated by people who understand how to operate in those parts of the world.¹

We have an ongoing operation called [ARCTIC SHIELD](#). It puts Coast Guard assets and personnel in the Arctic on an annual basis. We've been doing that for the past five years and have learned quite a bit about what it takes to operate there.

We're currently patrolling nearly one million square miles of ocean off the Alaskan coast. We're working with the U.S. Navy to advance maritime domain awareness. We are testing Arctic technologies and capabilities, including communications equipment; unmanned aerial vehicles; and ice radars that determine ice movement, ice thickness, and the like.

We also do ice-rescue training. We're exercising pollution response capability. We're working with Norway, looking at technologies that it has. It's done a tremendous amount of work on cleaning up oil under ice.

We're collecting scientific data, in conjunction with our various research entities, to further understand how this ecosystem is changing and how we should respond.

We look forward to working with you in the room to ensure safe, secure, and environmentally responsible maritime operations in the Arctic region. The good news is things are still developing slowly enough that we have time and opportunity to do this together and in a smart way.

Vice Admiral Mark Norman, Canada:

Thank you very much, Admiral Neffenger. Once again, we have a great briefing on things that are real, and not theoretical, from the perspective of a practitioner, an operator, in that area of the world. Some key takeaways are common to all, which is one of the great things about this symposium. When you look at the degree to which we have cooperation among all countries having an interest—either direct or an indirect interest—in what's going on in that region we see recurring subjects of improved awareness and information sharing.

We see the idea of partnership, in terms of bilateral and multilateral relationships, and how important they are. We see the recurring need to coordinate, both on planning and policy issues associated with challenges that lie ahead, and also coordinate activities on a day-to-day basis and in the event of emergencies.

Admiral Neffenger did a great job of putting logistics challenges in a context that we can understand. I was struck by the similarities with the brief by Vice Admiral Tim

1. In November 2014, two months after the International Seapower Symposium, the International Maritime Organization adopted the International Code for Ships Operating in Polar Waters (Polar Code).

Barrett from the Royal Australian Navy on MH370, which captured the imagination of the world. He spoke about the challenges of distance and logistics. Those same challenges are in the Arctic and other areas of the world that many of you operate in on a daily basis.

Closer to home, when we look at the Arctic, we not only see the environmental issues, but also the increased human activity. Admiral Neffenger mentioned the potential for accidents. Imagine an MH370-type scenario in that environment. Even worse, imagine a *Costa Concordia* scenario in that kind of environment. How do we imagine ourselves reacting and responding?

It's a great example of how we must work together and cooperate, even in the face of disputes at governmental and political levels. There's no secret that Canada and the United States have differing views in terms of how certain things are interpreted with respect to claims for seabed and sovereignty. And what a great story—last summer our two lead icebreakers, from our two respective fleets, worked side by side, doing bottom survey, topography, oceanography, and similar work, recognizing that this is a way for us to work together, to come to a shared agreement, so we can all go forward.

DISCUSSION

Rear Admiral Lars Saunes, Norway:

Thank you very much for a global presentation on climate change and our maritime common challenges.

Coming from Norway, my questions will be about the north. I'm just going to make a comment. First, we see a new commercial region that is open ocean. As Vice Admiral Neffenger said, it offers new economic gain for a lot of nations' companies up there, and they are surging into this area.

If you are in the North Atlantic, or in the Pacific, you have perhaps regional functions established, like the [North East Atlantic Fisheries Commission](#). You have environmental functions established in these traditional areas, where we normally operate. That doesn't exist in the Arctic. So how do we go forward? A lot of nations have made their own statutes to meet the challenges in the Arctic. Just think about communication. If you're going to have satellite communication for the Arctic, you cannot use the satellites that we use today. You have to build new ones. It will cost you about a billion dollars to get that.

All nations circling the Arctic need to come together to look at infrastructure. We need to have the tools to build maritime domain awareness. Countries need to cooperate to do that.

I would like your comment on that.

The other thing is the migration of resources. It's a good thing. We see blue whales and Greenland whales in Norwegian waters around [Spitsbergen](#). These are migrating through borders and economics zones. The governance for maintaining these resources, so they will continue to be there, is not established. There are a lot of interagency challenges that countries will not solve by themselves. This is an opportunity for the Arctic countries to come together and work those institutions and establish a regional governance.

That will challenge us to say, "This does not just affect the eight Arctic countries." Three thousand tourists on an Arctic tour will be from Europe. They will be from Asia. They will be from all over the world. An accident will not focus on Arctic countries alone. It will affect a lot of countries. We need to recognize that there are more countries than those around the Arctic that are interested in the Arctic.

My question goes to you, Admiral Norman. How do you see security challenges in the Arctic? There are military buildups. There are some countries building Arctic forces. For what reason?

My other questions are to Admiral Neffenger. How fast do you think we can establish governance functions? Will you achieve that as chair of the Arctic Council?

Vice Admiral Mark Norman, Canada:

You asked about the military side of it. I'll be honest, and I think everybody up there would see it the same. The Arctic Council is premised on an important principle: this is not a military cooperation arrangement. The issue is not a security issue as we would traditionally understand it. It's an issue of safety. It's security in a more civil sense than it is in a military sense.

The challenge for all the countries in that region—and I would submit across all other regions that I mentioned—is that, most times, it's militaries of those nations in the regions that have the resources to bring to bear on safety or security challenges. We don't see it as a military thing from a threat/counterthreat perspective. We do see it, clearly, from the perspective of an obligation to be prepared to respond and work with all partner nations.

We'll avoid the discussion about who's doing what, saving that for another day, because that's not what this symposium is all about, in my view.

I hopefully have answered what I think is the right answer about how our governments expect militaries to respond. We bring tools and training. We also bring discipline to what are normally undisciplined, chaotic scenarios, bringing order to disorder, be it saving of life, or any other scenario that we find ourselves facing.

Vice Admiral Peter V. Neffenger, United States:

I appreciate the question. I was, specifically, asked about how quickly we think we could get international cooperation in the Arctic.

If you'd asked two years ago I would have said probably pretty quickly. A lot has changed in the world in the past two years, making it a little more challenging. There are some tensions between the United States and Russia right now, with respect to world events. But that said, I echo what Admiral Norman said.

That doesn't obviate the need to figure out how to work together in a region that's developing. We think it's more imperative than ever that we find a way to cooperate in the Arctic, if for no other reason than if something bad happens up there, you've got to figure out how to respond. Not even the Russian Federation has all the capability it needs to respond to emergencies up there.

We're still pressing forward with this idea of dialogue among the Arctic coast guards or Arctic navies, and to do so from an operational perspective. I recognize the politics of the world. It may be challenging to work around those at times, but we're still advocating strongly for that dialogue. We've spent a fair amount of time

talking with other Arctic nations, Canada in particular. I believe Canada is still in favor of that but faces the same challenges with respect to world politics.

This week, Admiral [Paul] Zukunft, Commandant of our Coast Guard, is at the [North Pacific Coast Guard Forum](#), where he's meeting with his Russian counterpart to discuss fisheries operations in the Pacific over the next year.

There's opportunity for us to work together. There's an opportunity, when we take the chair of the Arctic Council, to advance this in that consensus body, in a nonthreatening way.

There are security issues, of course. People have those concerns. That's a geostrategically fascinating region. But the nice thing about the Arctic Council is that it's specifically chartered to avoid security. It gives you an opportunity to have these conversations. I think we're a long way from a military challenge in the Arctic. That gives us the opportunity to think about the more cooperative pieces of it.

All would like to see safe transportation across the Arctic, if it happens. All would like to see ecotourism, if it gets to the extent some predict, be done in a safe manner, have predictable corridors of operation, and resources available to respond.

I can't give you a definitive answer on timing. But we're committed to staying engaged in dialogue, and hope we'll see some movement.

Vice Admiral Mark Norman, Canada:

Your other questions, Admiral Saunes, were about looking ahead to shared investments in infrastructure, both physical and support infrastructure. You also mentioned communications and the need for improved governance and cooperation.

Again, I see parallels across this room. You start with what you have and can do now. You get together and talk that through. You figure out how you're going to work together to deal with the challenges you see. Then you say, "Okay, how do we see ourselves going forward beyond the immediate challenges that we're facing?" You made the point about looking at this from a longer-term perspective and [mentioned] issues like traffic regulation, standards for vessels, communications, and all these things. They are natural areas for discussion that flow from that first step.

Admiral Michelle Howard, United States:

My husband has a career working in an isolated wilderness area where they take clients. Clients are required to certify that they are fit. Companies are required to have insurance. The area is so isolated that if someone is injured, there's no getting in by vehicle. It's a life flight. Insurance also pays for the cost of that life flight.

We talk about ecotourism and what happens when things go wrong. We get to the search and rescue, which you guys do very well. Why are we not talking about it in terms of what you guys do well: public safety; regulation; requiring cruise ship safety, requiring clients to be certified that they're capable of surviving there, requiring insurance; and having private industry bear some of this risk, and not have it come out of our taxpayer revenue?

Vice Admiral Peter V. Neffenger, United States:

I agree completely with you. The good news is that the Polar Code addresses many of those issues that you're talking about. It's a challenging code to argue for. We've been sitting in the International Maritime Organization many years now, talking

about implementation of the Polar Code. It looks as if we'll get an initial agreement in place by late 2016. That will set standards for construction of vessels, operation of vessels, and training of crews. It'll address things like expertise for operating in these challenging regions, as well as the requirement to have adequate insurance coverage and the like. That's on the vessel and vessel operation sides.

When it comes to carrying passengers, you're absolutely right. That's an entirely different set of requirements. We don't have consensus on how passengers would be adequately trained and be in the kind of shape needed to go up there. You can put a very elderly individual on board these vessels and sail them up into the Arctic now. There's no regulation governing that, other than saying, "We'll come get you if you get into trouble."

You're right. It's challenging. It's an issue that's been discussed at the International Maritime Organization. It's not one that has any international consensus, at this point. There's great reluctance on the part of many nations to regulate that aspect of commerce. We're happy to regulate the ships, people operating the ships, training of crews, requirement for lifesaving appliances and equipment, and the requirement to have connectivity, communications, and the like. But when it comes to regulating the type of passenger that goes on board, there's great reluctance to do so. That's going to be an ongoing challenge.

Admiral Jonathan Greenert, United States:

I have a question for Admiral Steer and then for Admiral De Giorgi.

Admiral Steer, during your career, maybe in some predictive models, have you seen weather patterns changing that might be attributed to influences from the Antarctic?

Admiral De Giorgi, you spoke about the value of biofuels and what we're seeing in progress. Have you, any of your folks, or any reference material extrapolated and shown where this will be economically feasible, competitive? Dr. Yergin implied we're not going to be off petroleum for several years. On the other hand, we may have an opportunity, based on some of the things you described.

And Vice Admiral Phil Cullom—who's with me—you have some understanding of that, if you would pick up after Admiral De Giorgi.

Rear Admiral Jack Steer, New Zealand:

Whether the weather changes based on what's happening in Antarctica or not, the weather has changed. There is a lot more predictability about these extremes of weather. We now know, roughly, when they're going to come, much more than we did. They are more severe than they used to be.

The impact on operating down in the ice—there is more ice that comes earlier.

The weather in our region is significantly more extreme. There's much more of the extreme weather than we used to have. The summer sometimes disappears. For example, summer is much later in the season than when it used to be.

As far as further south, the extremes have always been there. So, around Antarctica, no. But around the northwest Pacific, yes. There is much more extreme weather.

Sea-level rise means the impact of that weather is far greater on low-lying islands. What would have been a small wave in the past is now something that takes away

your house, or something like that. That creates uncertainty for their families, lives, and lifestyles.

Weather is having a large impact on the South Pacific.

Vice Admiral Giuseppe De Giorgi, Italy:

Right now, cost is a factor, one that is discouraging navies and users from using this type of blended fuel. The idea is that we should arrive at the third-generation sources of biomasses, like the algae, that we can utilize. Then we will need much fewer square meters to produce the product. So, just for the cost, we foresee roughly ten years, a decade, to make this thing competitive with the price of oil.

Cost is not the only factor. For example, other things like that have an impact on the way we build ships. Think about the double hull, for example. Military oilers were excluded from this provision. But in the end, now, I think we will build our oilers with a double hull. It costs more and doesn't add any efficiency to the system, but it's imposed by rules and perceptions that the public has about natural disasters, the terrible loss of image, and guilt around who causes these things.

I think that while we need a decade to reach economic competitiveness, the impetus also comes a lot from new rules and regulations that impact our system.

Vice Admiral Phil Cullom, United States:

To add to what Admiral De Giorgi said, the U.S. Navy's [Naval Air Systems Command](#) has been working with the Italian Navy and [Royal] Australian Navy and has agreements in place, working those issues.

Regarding cost, we are working with our Departments of Energy and Agriculture to accelerate development of these biofuels, and that has come to fruition. We have signed agreements with several companies that will accelerate development and reduce cost way faster than we ever thought.

We originally, and similarly, thought that it would be probably 2022 before we would reach cost parity with petroleum. The agreements we have signed will get us below the cost of petroleum by 2016. [The process] uses some different types of feedstock. We had originally looked at growing the crops—rapeseed and similar palm oil. We are now looking at the waste stream from the forest industry in the United States and Canada, as well. There's a lot of leftover bioproducts that can be reduced into a biofuel. In addition to that, other American agricultural products—corn and corn stover, the leftover—also can be reduced to biofuel. Those will likely be the vast majority of the feedstocks. And it's just waste stream. It either gets burned, put into landfills, or plowed back into the soil. We can convert that into fuels by 2016.

Admiral Jonathan Greenert, United States:

Would you dispute, perhaps, what Dr. Yergin said—that we will be dependent on petroleum for the next decade or two? With that, he described an access and security problem, which was extraordinary. I am hearing you say that doesn't have to be that way. There are other alternatives. Is that what you're saying?

Vice Admiral Phil Cullom, United States:

To some extent. The need for regular petroleum oil for global needs will be so high, even with efforts to reduce the amount we use. We'll still need quite a bit, globally. [These efforts] will help level some of the costs for [petroleum], but they will certainly not completely supplant that.

We've long looked at things for aviation, for manned aircraft and larger aircraft. It'll be a long time before we are able to fly those on anything other than something like liquid fuel with a carbon basis to it, whether you produce that with biofuel or get that from petroleum.

Rear Admiral David Titley (Ret.), United States:

Regarding the CNO's first question—predictive models and changing weather patterns—one topic we're doing research on is how do you come up with a quantitative, repeatable [jet stream](#) index, so that you can separate out changes in the weather versus what is reported in a twenty-four-hour news cycle.

Sometimes we see everything, and it seems more real and bigger with social media, but what's really changed? How do you separate that for the population and where they live? So, we're putting that together now.

The other part is to think of the atmosphere. It's really the tail of the dog. Over 90 percent of the heat of the earth's system is in the ocean. As we keep heating up the ocean, you see these little changes. Little changes in the ocean have big changes in the atmosphere. That gets reflected in the weather.

We're living on the tail of the dog here. We're trying to understand the ocean, because that's going to help answer the CNO's question.

Unidentified Speaker from Cameroon:

This is addressed to Admiral De Giorgi, who dealt with renewable energies. When discussing land needed to produce biomass fuels, have substitution initiatives of renewable energy for hydrocarbons had an impact on climatic changes and food security?

If we tried to solve the problem of developed countries' dependence on fossil fuels for their industries, might we not create deforestation in countries of Latin America, like we see in Brazil with rapeseed growing, or in countries of Africa and Asia with extensive culture of crops? Did we adequately take into account the culture needed for those industries?

Vice Admiral Giuseppe De Giorgi, Italy:

The problem that you touched on is a very important one. This is why I said we should have real impact when we master and industrialize the third-generation biomass that exploits not only palm oil and traditional materials but also municipal waste and other things that the admiral just said.

At that point, efficiency of production increases enormously. It becomes much more viable and sustainable. This is the change in pace. It will happen when we master this third generation—not making fuel out of different and varied types of vegetables and other things. So, it's not only raising crops.

This debate is ongoing on both sides. There is a profit issue, of course, and this is part of the challenge. But there's the other side. It's also a liability issue. I cannot

talk for all the countries involved in this discussion. As far as we are concerned, this is an issue that is very important. I'm convinced that nobody would like to go to one extreme, where profits would be [par]amount and we would not take into account the other side, like food security and so on. Technology has enabled a good way to do this for the future.

Fleet Admiral Julio Soares de Moura Neto, Brazil

The question regarding the impact of biofuels—if we're going to use agricultural areas that harm food production, this is indeed an issue that requires a lot of attention. In Brazil, which produces biofuel, we take this into account. It is necessary to find a balance, so biofuel does not replace the production areas that are dedicated to food.

There will be the need for more food. There will be deficits of food in the world. The climate change will affect production of food and water resources.

Biofuel is a solution. It's an important solution that should be taken into account. But sovereign countries must also consider, first, not to harm the forests—obviously, this is very important to Brazil—and not replace production of food to create biofuel.



Regional Breakout Group Reports

Moderated by Professor Thomas Mangold
Dean of International Programs, U.S. Naval War College

Professor Thomas Mangold:

Admiral Greenert, Admiral Howe, distinguished navy leaders from around the world, welcome to the final session.

This is most important; it's our regional breakout. We hear the concerns and interest areas, gathered from the last couple of days. We took careful notes in the breakout sessions to find out what you thought was important. We have one representative speaking from each of the seven groups.

Without further ado, we'll bring in our Atlantic Ocean breakout group. Its speaker is Chief of Portugal's Naval Staff and National Maritime Authority, Admiral Luis Fragoso.

ATLANTIC OCEAN

Admiral Luis Fragoso, Portugal:

I report the discussion by the Atlantic Ocean breakout group, composed of delegates from Argentina, Brazil, Canada, Cape Verde, Gambia, Ireland, Mauritania, Paraguay, Portugal, Senegal, United Kingdom, and Uruguay.

We tried to analyze future trends in maritime security. We started by subdividing this region into the four corners of the Atlantic Ocean: northwest, northeast, southwest, and southeast. Then we tried to verify trends in these subregions and classified trends by color. These trends by subregions in the Atlantic Ocean follow.

Then we verified that there is a connection between these trends, looking forward and, if [there was] not a connection, [we determined whether] they are similar. Also, we could see that these trends were existing in the past, they exist now, and will exist in the future. So we changed the title to "Enduring Trends" instead of "Future Trends in Maritime Security."

To tackle the global trends, the best way is through enhancing partnership—but the question is how to do it. We considered building some organizations. We then took stock of a number of existing organizations, especially in the North Atlantic and in the southwest Atlantic. We see many regional organizations, like near the Mediterranean. We have a regular meeting between countries from the north rim of the Mediterranean and south rim, called "**5+5**," a very useful organization. The following are a number of other regional organizations:

- COAMAS [South Atlantic Maritime Area Coordination]
- North Atlantic Coast Guard Forum

Future Enduring Trends in Maritime Security

- Northwest

- Environment
- North to Arctic
- Traditional partnerships
- Emerging partnerships from south
- Shared awareness
- Cooperation on ongoing missions
- HA/counter-trafficking /info sharing
- SAR

- Southwest

- Protect natural resources
- Transnational crimes
- Antarctica
- Illegal fishing
- Continental shelf expansion claims
- Environment
- Hazardous cargo
- SAR

- Northeast

- Resource exploitation
- Illegal fishing
- Protecting citizens interests
- Working w/partner nations
- Illegal immigration
- SAR

- Southeast

- Natural resources
- Drug trafficking
- Illegal migration
- Illegal fishing
- Toxic waste dumping
- Information sharing
- Coastal erosion
- SAR

- North East Atlantic Fisheries Commission

- Sub-Regional Fisheries Commission

Besides those, we also have very well-known and codified structures—like NATO, EU [European Union], ECOWAS [[Economic Community of West African States](#)]—bilateral and multilateral arrangements that are in place, and situational coalition cooperation.

It is very important to have a common information-sharing environment. But here we considered the differences that we cannot ignore. They come from different realities.

It is also very important to build on what we have, invest in shared resources, develop common procedures, protocols, lexicons—very much in line with what we have discussed in previous days.

What are the prospects for regional cooperation to enhance partnerships? Once again, we verified that a number of initiatives are taking place, especially in the southwest Atlantic. Many of these initiatives are listed in the following.

Enhancing Partnership What are prospects for regional cooperation?

- Existing initiatives (example):

- CAMAS (South Atlantic Maritime Area Coordination)
 - South Atlantic nations sharing information
 - South Atlantic traffic monitoring > MDA
 - Brazil, Paraguay, Uruguay, Argentina
 - Info feeds from our navies and agencies (e.g. Brazil, Singapore, Italy, US, etc)
- Regional Information Sharing Center (ECOWAS & ECCAS)

Also, there is lots of room to improve. We looked at the challenges in front of us. We verified that there is a lack of actionable intelligence data. It's a big shortfall.

Also, it's easy to exchange information, but it's another issue to exchange intelligence, especially because there are differences in this intelligence.

It would be very nice to have, from the political side, a prioritization of resource allocation. We hope that political challenges [will not] scare political leadership.

Finally, the group selected the following enduring missions for maritime forces, mainly through the participation in situational alliances.

- Cooperation in humanitarian assistance/disaster response missions
- Need existing C2 [command and control] structure ready and exercised—no time to build during disaster
- Inter-American Conference: cooperation force in place with approved standard operating procedures.

This concludes my presentation, but I would like to make a final remark. I would like to thank the CNO [Chief of Naval Operations], Admiral Greenert, and all who are part of the U.S. Navy. I would like to thank, specifically, Admiral Howe for this amazing meeting. This was so well organized. Thank you for everything. It will be memorable.

Professor Thomas Mangold:

Thank you, Admiral. We move to the Caribbean Sea breakout group, led by Commander Antonette Wemyss-Gorman, Commander of the Jamaican Coast Guard.

CARIBBEAN SEA

Commander Antonette Wemyss-Gorman, Jamaica:

Admirals; mesdames; heads of navies, coast guards, and war colleges; and all delegates—let me first thank Admiral Greenert, on behalf of my Caribbean colleagues and my Chief of Defence Staff, [Major] General [Antony] Anderson [Jamaica], for continuing to support the Caribbean nations and allowing us to participate in this symposium.

I present the summary of the Caribbean breakout session. During our discussions, we realized that most of our issues were really similar to the rest of the world's, only that some of them are more acute for our region than they would be in others.

We looked at the future trends. I consider them to be past and current trends. In my twenty-two years of service in the Jamaica Defence Force, the following points were maritime trends and challenges that we faced. They are still today. We expect that they will still be so tomorrow.

- Transnational organized crime
- Illegal trafficking
 - Current—human, drugs, SALW [small arms and light weapons]
 - Future—transshipment of nuclear, chemical, biological [weapons] through region
- Weather/natural disasters
 - Increased frequency and intensity due to climate change

- Porous borders
- Small maritime force—an enforcement limitation
- Piracy
- Illegal fishing
- Corruption
- Increased presence of radicalized youth in poor economic regions
- Increased shipping through region increasing possibility of man-made disasters
 - Environmental, SAR [search and rescue].

I would like to put the Caribbean in context for those of you who are not familiar with it. It is an eclectic mix of maritime forces, which includes small-navy constructs, naval forces that are part of a defense force, coast guards, and marine police units. In some instances we have close neighbors. We speak different languages, the main ones being Spanish, French, Dutch, and English.

I will concentrate on the last two points. First, the presence of radicalized youths in our poor economic region. We are not immune to this phenomenon. We have a consensus that there is a nexus between all the other points and trends. Second, increased shipping through the region increases the possibility of man-made disasters. Our weak economies are dependent on maritime trade and tourism. The possibility of a single event in our maritime space is very concerning for our maritime security and survival.

We concluded that it's absolutely necessary for us to have cooperation to achieve our missions and protect our maritime space.

The following are some of our challenges to achieving coalition operations in the Caribbean.

Language Barriers. We have several organizations speaking to each other and different forums in the Caribbean, but they tend to be along language lines. The English-speaking Caribbean speaks to the English-speaking Caribbean. In Jamaica's case, our closest neighbors speak Spanish. We don't have that mechanism for joint exercises and operations. That is one particular challenge.

Political Barriers and Financial Situation. Those also inhibit our ability to execute coalition operations.

Lack of Capacity and Capability to Participate in Exercises. I must emphasize this. [Capacity and capability] would allow us to be able to execute missions as part of a large, joint coalition.

Significant Gaps in Our Maritime Domain Awareness. We don't have information to share.

Information Sharing. One of the points mentioned earlier in our discussions in this symposium.

We tend to have bilateral agreements with extraregional countries, as opposed to among ourselves in the Caribbean. We do have formal and informal constructs with neighboring countries for things like natural disasters because we face that yearly.

We do have, in the eastern Caribbean, the [Regional Security System](#), a coalition of islands for maritime security. But I refer back to the capacity issue, among our states. It is very limited to deal with any particular incident, or day-to-day issues such as drug trafficking and search and rescue.

We commented on **Code for Unplanned Encounters at Sea** (CUES). We think it is a very useful concept. It would improve interoperability and safety for us while conducting operations at sea, and certainly in the Caribbean for those countries that have platforms and capacity to do so. It is useful to examine. We thought the **TRADEWINDS** exercise, facilitated by the U.S. government annually, would be useful to exercise or test this concept.

We were enlightened by our colleagues from Colombia about their Center for Analysis of Narco-Traffic at Sea, which they set up as a medium. We could take steps toward working with our Spanish-speaking neighbors in the south.

I listened to Australia's [Vice] Admiral [Tim] Barrett's presentation yesterday [see above, pp. 91–103]. All the lessons that he learned and shared from the MH370 case were identical to those that I learned just two weeks ago, when a private aircraft with two persons on board went down in Jamaica's maritime search and rescue area. Regarding the MH370 case, we provide some points.

MH-370 Case Study

- Limited interoperability of systems inhibits cooperation
- Other responding countries/forces may not follow guidance (or recognize) lead country
- On-scene coordination breaks down after initial check in
- Collaboration is sometimes limited from larger countries to smaller countries when the smaller country has the lead

One point I'd like to focus on is the matter of trust. When these sorts of incidents occur, it is very important for us to be able to trust each other as a region, and any force that is brought to bear on this situation. This will only be achieved through joint training, which we already do, and by having standard operating procedures. But without trusting that we can each do what we are there to do and that we can adhere to certain standards, we won't be very successful, and it will be very tedious.

We in the Caribbean region recognize that maritime security has to be a collective effort. It is forums like this one and other regional ones that will help us to achieve our aim.

Professor Thomas Mangold:

Thank you, Commander. The Pacific breakout group's report will be presented by [First] Admiral Zulhelmy [bin Ithnain], Chief of Staff, Submarine Force Headquarters, Royal Malaysian Navy.

PACIFIC OCEAN

First Admiral Zulhelmy bin Ithnain, Malaysia:

Admirals, ladies and gentlemen, I am here to brief on the outcome of the break-out group's session. The discussion focused on four areas, namely, future trends in maritime security, enhancing coalition operations, regional maritime agreements, and a case study on the missing Malaysian plane, MH370.

The issues discussed under future trends and maritime security were brought up in previous International Seapower Symposia or they refused to go away as readily as we would like them.

The group agrees that international cooperation is needed for everything that we do in the region, as shown in the following [slide].

Future Trends in Maritime Security

- International cooperation needed in the following areas:
 - Search and rescue
 - Including submarines
 - Fishing
 - Shipping – prevention of environmental disasters
 - Natural disasters
 - Piracy
 - Trending into the SCS.
 - Counter piracy – agreement of guiding principles.
SOM model has worked well and could be adopted in the SCS.
 - HA/DR

Environmental Disasters. There are concerns about preventing environmental disasters, especially involving collisions at sea, or other incidents in remote areas that may cause oil spills, affecting the environment.

Piracy. The report also showed that pirate activities had moved into the South China Sea. This may be due to the effectiveness of counterpiracy patrols in areas like the Strait of Malacca. The Strait of Malacca model has worked well, and, perhaps, could be adopted in the South China Sea itself.

Natural Disasters. International cooperation in natural disasters has been seen time and time again, through humanitarian assistance and disaster relief (HA/DR) operations, carried out either in real or simulated situations. Indeed, we can never be prepared enough to face such calamities. A natural disaster regional coordination center, with a mobile command and control center, should be put in place.

Transnational Crime. Criminal organizations have been reported overtaking resources of small island nations, becoming staging areas for South America, Asia, and Polynesia. [In addition to] narcotics, there is a trend of weapon smuggling,

as well. Participants in the discussion believe that intelligence, cooperation, and information sharing are key to countering this threat.

Information Fusion Centre. Development and implementation of the [Information Fusion Centre](#), or IFC, in Singapore has greatly assisted coordination and information sharing among seafarers in that region.

On the topic of enhancing coalition operations there are already existing procedures and mechanisms in place. Therefore, the following are seen as enhancing coalition operations.

Navies need to exploit those existing exercises to be more effective in their application.

When working together, navies and coast guards should exercise transparency concerning international issues. There are also legal and jurisdictional issues when dealing with criminals. Australia indicated difficulties in implementation, but had taken steps to improve the situation.

Confidence and trust in each other: This is the core issue in working together. International issues can be easily handled on a strong confidence and trust foundation.

Forums such as International Seapower Symposium allow military leaders that opportunity to discuss some issues that may not be discussed at the political level.

The topic [of regional maritime agreements] sparked the most discussion. It focused on the Code for Unplanned Encounters at Sea (CUES). After some lengthy discussion, many countries indicated support for the following:

- Encouraging their navies to employ CUES. This would be for daily affairs at sea, and as part of the training curriculum for their navies.
- Encouraging implementation of CUES by coast guards and other law enforcement entities.
- Exploring an international organization formalizing implementation of CUES. This might be done by the International Maritime Organization, for example.
- Establishing a forum to discuss implementation of CUES. There should also be a mechanism to evaluate the effectiveness of CUES.
- Discussing issues regarding CUES at the next International Seapower Symposium.

The last topic discussed was the case study on the missing plane, MH370. The Malaysian chief of navy, on behalf of the Malaysian government, expresses his gratitude for the support and assistance rendered by the international community in handling this incident.

Even though the search for the aircraft was led by a civilian agency, military leaders were able to talk to each other over the phone and have military assets deployed at short notice.

As soon as the search area was narrowed down to the southern Indian Ocean, the Australians set up a joint task force to handle maritime coordination. The discussion then moved to searching for military objects rather than civilian ones. There were concerns about the sensitivity of searching for a submarine, for example. Participants then talked about the assistance of organizations set up to handle submarine disasters, such as [International Submarine Escape and Rescue Liaison Office](#). There were also some search and rescue exercises, such as PACIFIC RIDGE, to handle those situations.

There are standard operating procedures and organizations in existence out there. It is for us to align ourselves with them and maximize their use.

Ladies and gentlemen, this has been a very beneficial and fruitful discussion. Thank you very much for your time and attention.

Professor Thomas Mangold:

We move to the Indian Ocean breakout group. Admiral Dhowan, Chief of Naval Staff, Indian Navy, will make the presentation.

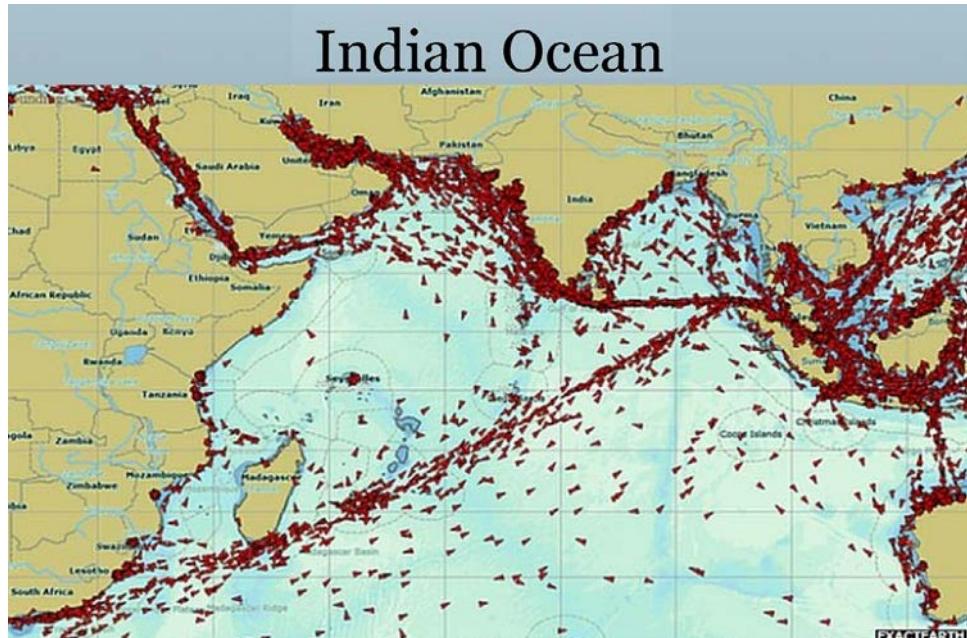
INDIAN OCEAN–GULF OF ADEN–ARABIAN SEA–RED SEA REGION

Admiral R. K. Dhowan, India:

Admiral Greenert, chiefs of the world navies, heads of coast guard, distinguished delegates, ladies and gentlemen, it is a distinct honor and proud privilege to present on the Indian Ocean region, based on the discussion in the group's breakout session, and to this august audience, representing the collective wisdom of the world's navies and coast guards under one roof.

[Trends in maritime security in this region are categorized as follows.]

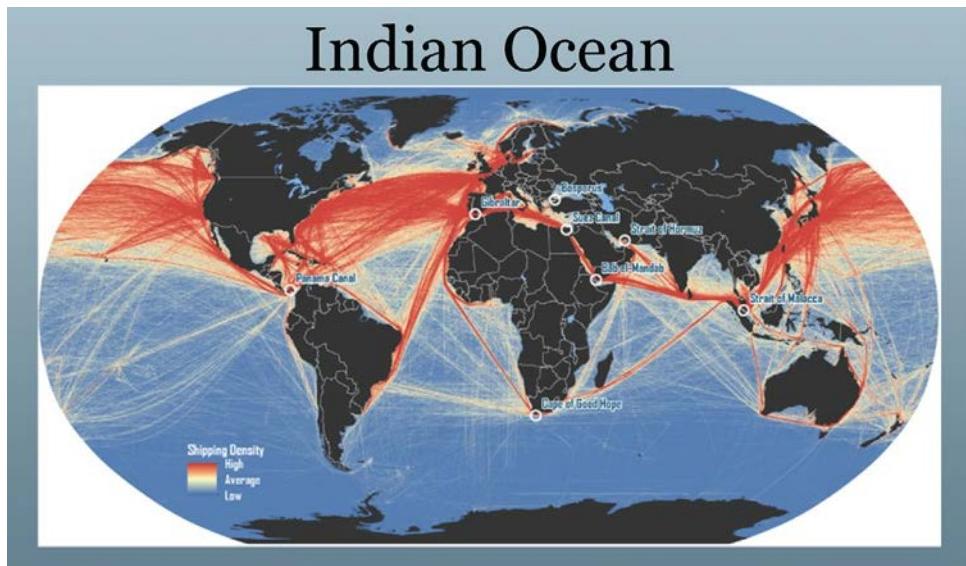
Extensive Maritime Traffic. The Indian Ocean is the world's third-largest body of water covering an area of 68.5 million square kilometers. It is also emerging as a global highway, the economic highway of the world, where nearly one hundred thousand ships transit every year over its water. When you add the hundreds of thousands of fishing boats and small vessels, you can imagine maritime density is really extensive.



Maritime traffic in the Indian Ocean region

Major Maritime Arteries. The Indian Ocean rim is also home to 2.6 billion people, nearly 25 percent of the world's population. The oil arteries, as well as the sea lines of communication that transit through this ocean, carry 66 percent of the world's oil, 50 percent of the world's container traffic, and 33 percent of the world's cargo traffic.

Entry and Exit Only through Choke Points. Another peculiar aspect of the Indian Ocean region is that its northern areas are covered by countries around it; therefore, entry and exit are only through choke points, whether it's at the Cape of Good Hope, the Gulf of Aden, the Strait of Hormuz, or the Malacca Strait, through which nearly sixty thousand ships transit every year.



For the Indian Ocean, entry and exit are only through choke points.

Majority of Maritime Transits Are Extraregional. Another fact distinguishing the Indian Ocean from the Atlantic and Pacific is that 80 percent of the trade transiting the Indian Ocean region is extraregional. The numbers are just about reverse when we compare the Pacific and Atlantic Oceans.

Security Challenges—Disruptions to the Flow. Any impediment to the free flow of oil or trade through the Indian Ocean region will have a detrimental impact, not just on the economies of the region, but on the economies of the world. We looked at the security challenges and realized that the security challenges and threats in the Indian Ocean region are as wide and varied as they come.

Who could have imagined that in the twenty-first century we would be grappling with pirates, or that the major security challenges would be in the form of asymmetric warfare and maritime terrorism.

The other challenges in the region include drug and arms smuggling; human trafficking; and in some of the regions, illegal and unreported fishing, including that by external entities.

The region also has its share of natural disasters, since nearly 70 percent of the world's natural disasters occur in the Indian Ocean region itself.

Prioritization of Challenges. We found that the common thread for the first set of security challenges is that they are all destabilizing and illegal in nature, whether it be piracy, terrorism, drug and arms smuggling, or illegal fishing. Natural disasters need to be looked at differently.

Moving on to cooperation challenges.

Navies Cooperate Best, but Solutions on Land Are Needed. It emerged during discussions that naval forces and coast guards were best suited to form cooperation engagements. While we discussed piracy, the solution lies in sorting out issues on land in Somalia, and having an effective government. Also there is a need for effective legislation to sort out the issue.

Information Sharing—Remove the Silos. To have any cooperative engagement in the region there needs to be a very robust information exchange and maritime domain awareness. For information sharing, there is a need to remove the silos and compartments so as to have free flow—transfer and exchange—of information among cooperating partner navies.

Whole-of-Government Approach. A whole-of-government approach is needed to find short-term and immediate solutions, and also look at some long-term solutions.

Trust, Policy, and Technology Are Needed for Information Sharing. With regard to information sharing, there is a need to build trust among partnering navies and coast guards, develop policy, and leverage technology to filter and share information among nations.

We looked at some existing regional-level policies on information sharing for antipiracy patrols. There is the [Mercury](#) [Internet-based communications system] setup, a sharing mechanism. We need to codify collection and look at sharing this information internationally, among other partners, as well.

Common Operating Picture. A common operating picture is needed for any effective form of cooperative engagement. It was the consensus that we need to look to the chairman of the [Indian Ocean Naval Symposium](#), the chief of the Australian Navy, Admiral Barrett, to examine this aspect and come up with an effective maritime domain awareness solution for the region.

Look at the Money Trail. We looked at certain aspects of piracy. A lot of money paid as ransoms actually ends up on land. We need to take a holistic look at this and look at the money trail.

Regulate Private Security on Vessels. While the presence of armed guards has certainly brought down successful piracy attempts, there is a need to regulate their presence on board these vessels.

Standard Operating Procedures for Humanitarian Assistance and Disaster Relief. When disaster occurs, it is a period of confusion. Participating navies and organizations want to contribute but are unaware of what is required. They also need to know what the nature of the disaster is. When disasters are not occurring, we need to develop standard operating procedures—have a template for how to respond and format for participating navies or coast guards to do humanitarian assistance and respond to natural disasters.

Code for Unplanned Encounters at Sea. It was the group's view that CUES is an excellent initiative. However, it was felt that it is specific to naval forces. There is a need to include coast guards, which have more relevance in the Indian Ocean. We

also looked at extending CUES applicability to humanitarian assistance and disaster relief situations, and how it could be adapted for ships arriving for relief operations.

It was again decided that the various working groups under the Indian Ocean Naval Symposium need to evaluate initiatives for effective maritime domain awareness, as well as the applicability of CUES.

Balanced Codification. We need a very delicate balance between making things too rigid or codifying every single aspect and, on the other hand, keeping it informal. Cooperation needs to look at partnership as a volunteer operation. It should enable participation by all and be inclusive.

We need to develop exercises based on the lessons learned [from the MH370 search] to enhance coordination. These could be tabletop exercises or regional exercises. We need to develop regional standard operating procedures from the lessons learned, which [will] help quickly [establish] a proper search area in the event of an incident, so that lag time is minimized.

Coordination between naval and civil aviation agencies is also needed. Civil agencies often lead due to statutory requirements, but more than likely it is naval forces that will be first responders. Initiatives to improve capabilities should involve civilian as well as military agencies. And we need to professionalize liaison officers. They need to be familiar with civilian and military requirements and capabilities international requirements, and be trained accordingly during peacetime.

In summary, ladies and gentlemen, the following map is not upside down. This is how countries of the region need to look outward toward the seas that provide a natural outflow into the Indian Ocean region.

Oil arteries and sea lines of communication run through the Indian Ocean region. With the importance of the seas growing every single day, there is no doubt that the current century is the century of the seas. To meet the multitude of challenges on the



How countries of the Indian Ocean region should look at the seas

oceans and seas, there's a need for cooperative engagement. This cooperative engagement, as I said, needs to be participative and inclusive in nature.

It was also felt that we need an effective and an efficient maritime domain awareness as the bedrock of this cooperative engagement.

All nations of the region have vast maritime interests. The responsibilities for protecting these maritime interests fall squarely on the shoulders of navies and coast guards. It is their responsibility to ensure that maritime interests, which have a vital relationship with the region's economic growth, are allowed to develop unhindered at all times by keeping the global commons safe and secure.

Professor Thomas Mangold:

Thank you, Admiral. Our next speaker, Commodore Sverre Engeness, Commander of the Norwegian Coast Guard, will present for the Norwegian Sea, North Sea, and Baltic Sea breakout group.

NORWEGIAN SEA, NORTH SEA, AND BALTIC SEA REGION

Commodore Sverre Engeness, Norway:

Admiral Greenert, ladies and gentlemen.

[Trends in maritime security in this region are categorized as follows.]

Increased activity. In the region—from the Baltics and North Sea, including the high Arctic on the Atlantic side—there is increased activity in the maritime domain. This is resulting in greater pressure on and within the domain itself. This increased activity is indicated in the following.

Increased Risk. With increased density in activity follows an increased risk of accidents, or other undesired occurrences. These incidents may not be a disaster, but

Future Trends in Maritime Security

- New Challenges - More Pressure on Maritime Domain - Increased Risk
 - Increases:
 - Merchant shipping and ship size with hazardous materials
 - Russian military activity and modernization (Region)
 - Drug smuggling, human trafficking and migration (Baltic)
 - Pipelines (Baltic)
 - Maritime traffic rule breaking (Region)
 - Maritime traffic in Arctic (merchant shipping/fishing/cruise ships/research)
 - Safety, resource management, security
 - Arctic nations collectively respond to incidents (pool resources)
 - Incident would likely involve many non-Arctic nation citizens
 - Sea temperature rising and fishery moving north (Arctic)
 - Air traffic in Arctic - increased potential for international air incident/accident
 - Other Challenges
 - Competition in Arctic (political/resources)
 - Limited ice-capable ships
 - Northern Sea Route is being developed
 - Cyber threats – including data manipulations of crew and cargo manifests
 - Interagency stovepiping/division of authority
-

their secondary effects may require significant resources in order to normalize the situation. They require actions predominantly by a home government's interagency efforts, rather than a single entity.

Increased activity in the maritime domain relates to most areas of a modern society. They [range] from increasing trade and marine resource exploitation to expanding critical infrastructure like pipelines and communication lines. Safe operations at sea are also affected by organized crime utilizing the maritime domain, singularly or in combination with cyber.

Increased Security Tensions. Safety at sea is affected by increased regional tension with respect to security and defense. The Ukraine crisis and comprehensive modernization of the Russian Armed Forces are two significant factors in this region. But the conduct of operations by ISIS [Islamic State of Iraq and Syria] and foreign fighters from Europe may be as significant in the near future.

The breakout group for the Norwegian Sea, North Sea, and Baltic Sea region provided the following challenges to coalition operations, as well as prospective ways to overcome them.

Enhancing Coalition Operations

- Challenges to Cooperation
 - Good Cooperation Exists in Region, but....
 - National rules
 - National internal information sharing
 - National will to devote resources to Arctic issues (capability / infrastructure)
- Prospects for Cooperation
 - Leverage existing regional cooperative models for law enforcement and security. (SUCBAS, EUROSUR, Arctic Security Forces Round Table....)
 - Baltic nations continue to participate in exercises, operations and seminars to improve sharing and interoperability (Including information sharing systems)
 - EU nation coordination fosters continued improvements
 - Increased Cooperation:
 - Multinational/interagency operations center for Arctic (planning, MDA, SAR, resources)
 - Continuing SAR, pollution control and ice breaking (Baltic)
 - Multinational exercises in Arctic in challenging environmental conditions
 - Leverage multinational resources to overcome limited capacity
 - Officer Exchange (staffs / embarked)
 - Arctic maritime domain awareness initiatives
 - Should include Russians in Arctic cooperation
 - Leverage existing relationships (Coast Guard, Transportation Agencies.....)
 - Russia also stove-piped geographically with multiple ministries
 - Partnership with private sector is likely best way to improve infrastructure and transportation capabilities

Well-Regulated Domain but Different National Approaches. The maritime domain is, internationally, reasonably well regulated with conventions and laws. Where there are gaps, national legislation normally fills them. There are differences in nations' legislation, execution, organization, and design, and use of capabilities.

Overcoming Stovepipes. It's recognized that most maritime operations are whole-of-government or interagency in nature. Therefore, it's crucial to overcome

stovepipes, align decision-making processes, and cooperate among agencies. These actions are needed to enhance operational tempo and act efficiently and effectively.

But these actions do not necessarily reside with maritime forces. As [Vice] Admiral [Matthieu] Borsboom [The Netherlands] said, they reside at the political level, requiring a top-down approach and firm leadership.

In this region, there are agreements in place enhancing cooperation. I would like to put forward one example. The [Incidents at Sea Agreement](#) was signed in Moscow in 1972. I think it resembles the Code for Unplanned Encounters at Sea quite significantly.

Other agreements and institutions have been put in place, primarily by NATO and the European Union, enhancing and supporting cross-border cooperation and institutions. And it was mentioned that a center has been established in Lisbon [the [European Maritime Safety Agency](#)], where nations' interagency personnel cooperate and effectively execute.

Maritime forces, as such, represent a capable tool in a government's toolbox, being ready and present, and [possessing] a formidable strategic, operational, and tactical ability to move. But a maritime force is predominantly trained for war fighting and may not be best suited for law enforcement or other, related tasks.

It is tempting to conclude that a maritime force is not preferred, considering that law enforcement-like tasks may be detrimental to its primary mission, combined [as the are] with lower proficiency and efficiency in typical civil tasks. This is an attitude at least that I have experienced, and probably you as well, when interacting with various government agencies.

However, the maritime force's inherent features—like its professionalism, flexibility, and availability—make it a natural partner in dealing with the issues and the trends in this region.

For high-north operations, specially designed units are required. For the time being, that is a niche capability.

Maritime forces capabilities—in conjunction with law enforcement, including its comprehensiveness and ability to utilize other government agencies and lead them—make the maritime force a vital and important resource. This is probably even more important today, considering developments within this region over the last six or seven months.

Significant progress has been made in the ability to conduct operations within or outside an interagency framework in this region.

Consider the vastness of the region, especially if we include the high Arctic, with barely any infrastructure supporting utilization of the maritime domain. At least for the foreseeable future, the way ahead will require situational awareness, ability, flexibility, and adaptability in combination with multinational cooperation.

Thank you for your attention.

Professor Thomas Mangold:

Thank you, Commodore. Our next group is the Gulf of Guinea, represented by Rear Admiral Jeff Biekro, Chief of the Naval Staff, Ghana Navy.

GULF OF GUINEA

Rear Admiral Geoffrey Biekro, Ghana:

Admirals, heads of navies and coast guards, distinguished ladies and gentlemen, good afternoon.

The Gulf of Guinea subregion may be defined as the west and central nations fronting the Atlantic Ocean, from Angola in the southeast to Senegal in the west. The group deliberated on future trends in maritime security, challenges facing the region, and solutions to those challenges. I have the honor and privilege to present the group's findings, opinions, and recommendations.

Before proceeding, I'd like to thank the resource personnel who placed their professional expertise at our disposal, assisting and guiding us through the process. I also thank members of the group for their frank and incisive contributions.

An Area of Criminal Activities. According to the [UN Office on Drugs and Crime](#), the Gulf of Guinea is one of the world's largest areas for illegal and unregulated fishing and trafficking of counterfeit goods, people, illegal drugs, and weapons. Piracy and armed robbery against ships in our maritime domain are also major concerns for regional governments and the international maritime community in general.

The group identified unregulated and unreported fishing, piracy, oil theft, and bunkering at sea as the most potent threats to the Gulf of Guinea countries.

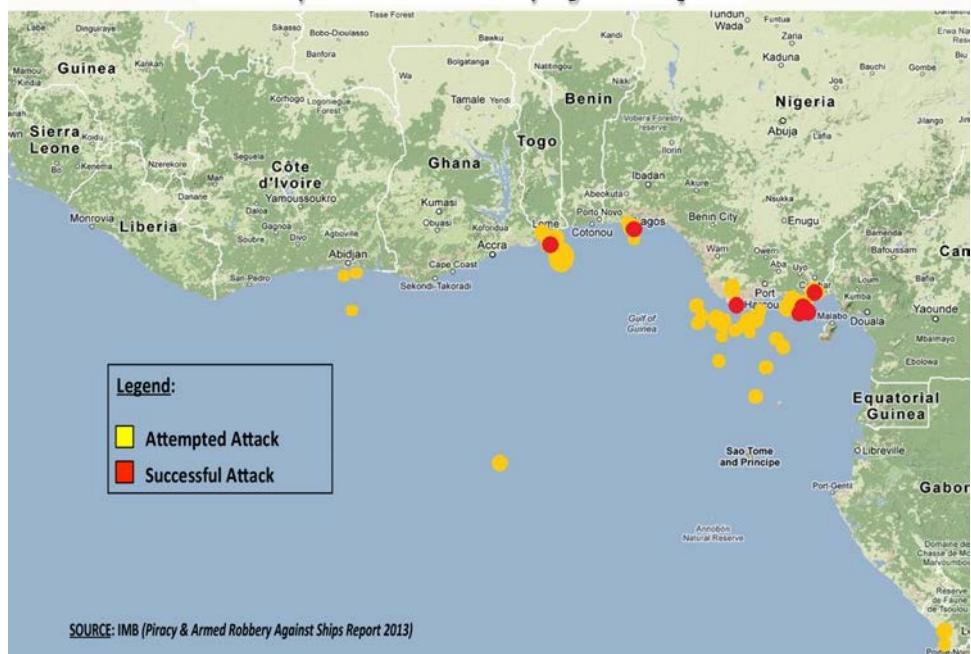
Illegal, Unregulated, and Unreported Fishing. This is considered the most serious threat facing many of the countries in the region, due to economic and human impacts. In Ghana, for instance, the fishing industry constitutes 4.5 percent of our gross domestic product, employing about 10 percent of the population. Fish also constitutes 60 percent of the population's protein intake. Dwindling fish stocks due to poaching create economic hardships, unemployment, and malnutrition in the country. This is a situation in all the countries in the Gulf of Guinea region.

Piracy and Armed Robbery against Ships. The book [Dangerous Waters: A Catlin Group Limited Guide to Kidnap and Piracy in the Gulf of Guinea](#) reports that ships carrying millions of dollars in crude oil or refined petroleum products make attractive targets for criminals looking for sources of revenue. Pirate attacks on ships and [theft of] oil cargoes in the Gulf of Guinea are daily occurrences. With an increase in production of oil and gas in the region, if this threat is not arrested, it could, in due course, affect overall global energy security.

Oil Theft and Bunkering at Sea. This is a major threat to oil-producing countries in the region. Nigeria alone is said to lose about six hundred thousand barrels of crude oil a day through oil thefts and other criminal activities. The situation is similar in other oil-producing countries, including Angola, Equatorial Guinea, and Gabon. This criminal activity can only take place with active connivers of national agencies and international collaborators.

An emergent threat is ships bunkering at sea in our exclusive economic zone. Apart from the threats of pollution, these ships become vulnerable to attack by pirates attracted to petroleum products being transferred. Many ships were engaged in ship-to-ship transfer of crude oil when they were attacked by pirates. The law is clear about a coastal state's right to regulate such activities.

Piracy and Armed Robbery Against Ships



Piracy and armed robbery at sea are daily occurrences in the Gulf of Guinea.

Other Threats. These include smuggling of goods and narcotics, illegal migration, and maritime border disputes.

How Operational Challenges Were Identified. The group noted security deficits—differences between threats and capabilities of Gulf of Guinea countries. These deficits included inadequate maritime surveillance and inadequate maritime domain awareness, [which were] seen as the most daunting challenges facing maritime security forces in the region.

The Problem of Information Sharing. International allies and partners have more information and a better maritime picture of our region than they are sharing with us. To quote Admiral [Bernard] Rogel of the French Navy, let us move from the “need to know” to the “need to share.” We in the Gulf of Guinea area therefore request that information be shared with us on a daily basis.

Political Will and Funding Gaps. Also identified as a major hindrance to maritime security operations in the Gulf of Guinea [are political will and funding gaps]. However, it's also acknowledged that governments that appeared to be suffering from “sea blindness” are now regaining their sight. Consequently, governments in the region are beginning to recognize the importance of the maritime domain, and are increasingly willing to invest in maritime security.

Currently, overall defense spending is small and highly inadequate to make any impact on maritime security in the subregion.

Varying Levels of Socioeconomic Development and Large Disparities in Capability. These were identified as hindrances to collaborative efforts in the region. And we have inadequate equipment to counter the threats identified.

In Yaoundé, June 2013, heads of state signed the [Code of Conduct Concerning the Repression of Piracy, Armed Robbery against Ships, and Illicit Maritime Activity in West and Central Africa](#). This set the tone for regional cooperation and further enhanced political will regarding maritime security in the Gulf of Guinea. Based on this agreement, the two regional bodies formulated subregional strategies for maritime security. These bodies were the [Economic Community of West Africa States](#) and [Economic Community of Central Africa States](#). It is important that these strategies are implemented.

We have the processes established. However, there is the challenge of funding the implementation of these strategies. In recent times, Gulf of Guinea countries have been pressed to improve security in our maritime common. We are well aware of our obligations. We urge the international community to also recognize our limitations and come to our assistance. The threats may be local, but the effects are global. We call on our global partners to give more clarity on willingness to assist us, and the nature and quantum of support they can offer us.

On behalf of the Gulf of Guinea group, I thank Admiral Greenert for inviting us to this year's symposium and offering this opportunity to state our case and to get to know each other better. This will surely enhance our collaborative efforts.

I'd also like to acknowledge and thank Admiral [Mark] Ferguson, [Commander, U.S. Naval Forces Europe and Africa](#), for his commitment to enhancing American security in the Gulf of Guinea and his immense support to the Gulf of Guinea navies.

Thank you for your attention.

Professor Thomas Mangold:

Thank you, Admiral. Our final group is the Mediterranean, Black Sea, and Caspian Sea. Its report is being presented by Vice Admiral Giuseppe De Giorgi, Chief of the Italian Navy.

MEDITERRANEAN SEA, BLACK SEA, AND CASPIAN SEA REGION

Vice Admiral Giuseppe De Giorgi, Italy:

My group was composed of chiefs of the navies in Algeria, Azerbaijan, Croatia, Cyprus, Egypt, France, Georgia, Greece, Israel, Kazakhstan, Lebanon, Malta, Montenegro, Morocco, Romania, Slovenia, Spain, Tunisia, Turkey, Ukraine, and the United States.

The Mediterranean is 1 percent of the surface of the world's oceans and seas, but 20 percent of the maritime traffic flows through this little sea, including 30 percent of the world's oil.

We have three qualitatively different challenges. These were determined to be

- Illegal trafficking. We have a new order of magnitude, changing the problem's dimension and impact in the Mediterranean. For example, it's focused most of my navy on search and rescue and controlling illegal immigration.
- Ukraine conflict and hybrid warfare. It's happening now. It's not far away anymore. It's something that is being experienced.
- Pollution. It's unintentional pollution. There is also the danger of intentional pollution used as a weapon of destruction in the hands of terrorists.

[Our] top regional issue is illegal use of the sea. There are all sorts of illegal uses in the Mediterranean. We are witnessing a dramatic increase in illegal activities, from human trafficking to the smuggling of weapons, especially in the eastern Mediterranean.

[We agree we must] expand and strengthen regional cooperation. This trend is indicated by **Standing NATO Maritime Groups** [which we could] extend to non-NATO nations; the **5+5 Defence Initiative**; **Black Sea Naval Force**; and **OPERATION BLACK SEA HARMONY**.

The following trends experienced in the Mediterranean Sea, Black Sea, and Caspian Sea region have global links or implications.

- Traffic in illegal immigration linked to global threats. The trend is a maritime issue. For example, of the one hundred thousand people rescued since we started this operation last November, 70 percent came from Eritrea—very far from the Mediterranean. This mass of people went through Libya, arrived in the Mediterranean, and then moved to Europe.
- Trafficking encourages more trafficking. Politically, we haven't found a way of dealing with this huge problem, so we are accepting all migrants. On the Italian side, this is the only answer we think is possible. On the other side, it is going to be destabilizing.
- Failure to respond to hybrid warfare emboldens adversaries. This also places additional emphasis on the need for ballistic missile defense.
- Additional capabilities that are more holistic. The United States could serve as a catalyst for expanding cooperation—changing the way we do things. To date, cooperation has been several separate efforts. For example, we have the **5+5 Defence Initiative** and other activities that are NATO-led. We should try to put these things together for greater synergy and produce a better solution than we have now. We need to have a holistic approach to problems.

We also have to link the different interagency approaches that we have now. We are working with vertical stovepipes when interfacing in Europe. We have to develop different approaches, different policies, so navies talk to navies, coast guards to coast guards, and civilian agencies do the same.

The challenges to closer maritime cooperation were determined to be as follows:

- Political priorities and “sea blindness.” One thing we face in the Mediterranean is the difficulty in changing political priorities regarding a maritime approach, or the “sea blindness” effect. Political leadership does not understand that the maritime approach is a big factor. For example, this sea blindness slows down the reaction to crisis, because it doesn't take into consideration the advantages of having ships pre-deployed in the crisis areas. Sea blindness slows down political decision making. It moves to a reaction mode instead of planning ahead to contain the crisis.
- Financial and economic conditions in the region. These will definitely slow down all attempts for more effective cooperation in the region. Also about exercises—those are going to be difficult to put together, because of the problems with buying fuel and spare parts and paying crews.
- Regional conflicts. Some activities are suspended. For example, this is occurring due to the problems that we have in the eastern Mediterranean.

- Strategic surprise. Something that startled all of us was the Arab Spring and its ramifications. Most of us thought that the Arab Spring would have led to solutions for problems in North Africa. In many cases, though, it's worse now than it was before.
- Interagency processes. It's different for each problem.
- Impact of failing states. I mentioned Somalia. Libya also could become a failed state if it doesn't find peace and stability.
- No common European approach toward this part of the world. Every nation has its own agenda. We have not been able to produce a cohesive European foreign policy, in general, and especially for this part of the world.

[Our] prospects for regional cooperation were determined to be as follows:

- Create a southern flank strategy. NATO could do a lot to accelerate this process.
- Expand the Standing NATO Maritime Group. For example, include non-NATO partners.
- Expand on the success of 5+5, Black Sea Naval Force, and BLACK SEA HARMONY.

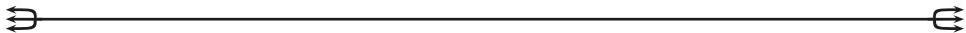
These are some measures that are necessary to improve the situation in the Mediterranean and make us more effective. For sure, there are many others. The time has come to refocus on this area, much more than what we are doing now.

We recognize the importance of the Code for Unplanned Encounters at Sea. We have to take into account that the MTP-1 [*Multinational Maritime Tactical Signal and Maneuvering Book*] is widely used in the Mediterranean. We have to work toward a single code. We propose an experts meeting to prepare for the [Regional Seapower Symposium in Venice](#), where we could address CUES, and see if we can adopt it, or merge it with the MTP-1.

There were concerns in the MH370 case study, and the experience with [Air France 447](#) was brought up. The following points were made regarding the case:

- Readiness is a major factor. We have to put assets on scene quickly.
- Maritime patrol aircraft are a major part of the surge. But they are very scarce. Many nations don't have maritime patrol capabilities.
- Interagency: we have to improve information sharing and its communication structure.
- Global search and rescue convention: it already exists. Before going through a painstaking new process, we have to apply what we already have.
- Ship rescue: international conventions that exist are negatively impacted by mass immigration. Mass immigration changes completely nations' attitudes toward search and rescue when we are talking about massive operations like the one we are handling now. When you save four hundred people who are migrants and not tourists, they don't want to go to their own country where they started from. They want to enter a nation, in this case illegally.

I will take this opportunity to thank you, Admiral Greenert, for inviting me, and especially for the way you led this symposium. I thought it was exceptionally well led and organized. I also want to thank my colleagues for their professional wisdom, which I will treasure. I wish all of you fair winds and following seas.



Closing Remarks

Rear Admiral P. Gardner Howe III, U.S. Navy
President, U.S. Naval War College

Admiral Jonathan W. Greenert, U.S. Navy
Chief of Naval Operations

Rear Admiral P. Gardner Howe III, United States:

Admiral Greenert, and distinguished leaders of the world's navies and coast guards, sadly, the Twenty-First International Seapower Symposium is about to close. When we opened it just two days ago, I offered that I was hoping the College would provide a forum to think, discuss, build on relationships, and begin some efforts toward solving common problems. As I think back on the lectures, panel discussions, breakout discussions, and even sidebar and social event discussions, I would say we've met those objectives.

Many individuals who spent time on this stage put significant thought and effort into their presentations. I extend my sincere appreciation to them for doing so. It was with their leadership, and your participation, that we learned so much about co-operative efforts that are ongoing across the world's oceans and those that still have potential. I'm hopeful that we will continue to work together for the common good.

As I reflect on the proceedings of the past couple of days, I am struck by how often the word "trust," and its relationship with relationships, came up time and time again. It was repeatedly identified that trust—that critical component of a relationship—moves it from an "I know you, and you know me," simple relationship to a true partnership.

A senior mentor once passed along an interesting observation about the nature of trust that I thought you might find interesting. He offered that trust, and the relationship that it builds, is never static. It is either being enhanced, or, in some way, it is deteriorating. I found this framework very useful. It's framed the manner in which I try to approach relationships: taking a more proactive approach, and not taking anything for granted. If it is not sustained, then it is probably deteriorating.

As we close the International Seapower Symposium, I would offer that it might be a framework to consider. In the days, weeks, and months to come, we build on the relationships, trust, and partnership that we've engendered here. We don't take them for granted. We look for opportunities, both large and small, to advance them.

I would like to take one quick moment to thank the extended International Seapower Symposium team: members of the CNO's staff, Naval War College

faculty, and a big chunk of the Navy Reserve forces who came together to put on this symposium.

It has been a real pleasure. I've watched with pride over the last two weeks when we've tightened up the plan, began rehearsals, and did tight coordination. I watched as that team refined the plan, made final preparations, executed the plan, and then in these last two days adjusted it as they've needed. They're out there continuing to work, making preparations for your departure. I know they will greatly appreciate, as you do depart, a smile, and a shake of your own hand, when you get a chance.

I bid you farewell. Thank you. I look forward to seeing you all [in the future].

Admiral Jonathan Greenert, United States:

Thank you, and obviously, a tip of the hat to your team. I also call out Rear Admiral Doug Venlet [United States]. This forum has been his life for just about a year—actually, longer than that, because we had to cancel the last one, as you all know. Doug put this together, with his team, and over a long time. So very many thanks.

I am awestruck, working with such an august group. You're good people, caring very deeply about your sailors, your countries. You, along with your spouses, have dedicated your adult lives to a very noble venture.

Your investment of time—with very busy jobs, and in-boxes that keep filling up; [you've got to] keep attacking the BlackBerry or iPhone to keep things going—I'm very deeply appreciative. I hope it's been productive for you.

Remember, we're part of a global network. There are global solutions out there. We have global problems. Where we can, we should find those solutions.

There is this potential energy of almost eight hundred ships, our ships under way every day, doing something in a collaborative manner. Imagine being able to harness that toward common issues around the world. That's sort of the dream I have.

My predecessor really came up with this idea of a thousand-ship navy. I said, "Really, one thousand?" And [Admiral] Mike Mullen [(Ret.), United States] said, "I don't know; I picked a number." But it's almost a reality.

Think about that and remind yourself that we are so different. We have languages, cultures, histories, governments, and then politics and policies. They're all very different.

But we have that common environment. Like my Secretary of the Navy [Ray Mabus] said, we don't look down for the border that separates us and make sure we understand where we are separated, and how far we can go; we look out there to see what's possible and what we can do. That's the sea.

We have common interests. We have common responsibilities. We've got a lot of common challenges. They were laid out very clearly in the regional breakouts. I thought you did a great job in the summaries for the regional breakouts. My view is that the regions have a pretty good grasp on what the relevant issues are for them and what they want to do.

Some said, "Well, this is larger than the region." I share a few things that I took away that I think that we've agreed—or, at least, I've agreed—to take on.

One is cyber. We've got to study this thing and see how that applies to the collective group. It can be very national, and that's really not, specifically, our business. But it's also going international, and transnational. I really appreciate [Rear Admiral Lai [Chung Han, Singapore] agreeing that when we do the International

Maritime Defence Exhibition we take this on and get into some substance of that, in Singapore next May.

CUES [Code for Unplanned Encounters at Sea]—I for one was very pleased at how we grabbed ahold of this thing and said, “What are we going to do with this?” I was taken by the Indian Ocean group, the Mediterranean Sea–Black Sea–Caspian Sea group, and Pacific group. Everybody commented on it. I interpreted those groups as saying, “Let’s take a hard look at this, consider a governing body, and make sure CUES is addressed.”

It will be in this forum’s agenda next time, whatever condition CUES is in. We know it’s adopted in the Pacific. Twenty-one nations signed to it—they’re in. You heard Admiral Wu [Shengli, China] and others say, “We are training, pushing this to our people.” I am the same way about that. Other nations did the same.

What I am going to suggest [and] going to promote [is that] you are either in, or you are not [in]. I’ll leave that up to you. We need some people from the regions to come together and look at the document, study it, and get comments. I’ll get to how we pass those comments around to all of us. Some of you in the regions are going to take it on. You said so. You can use your regional forums to do that; that’s fine. This body will bring CUES to the table for a discussion. More on how we’ll get that working group going [will be provided to you].

Information sharing—there are a lot of systems out there in use today. We need to see how we get these documented and cataloged, so people can plug and play, taking these information systems to the lowest common denominator, so we don’t get tripped up in a lot of interoperability memorandums of agreement that we can’t get by policies.

That may require a regional approach. I understand that. But if we can catalog that, then folks can go reach out to [the regions] and say, “How does this thing work? It seems to work well in the Atlantic region. It seems to work pretty darn well in the Indian Ocean region. How do we allow everybody—Gulf of Guinea, etc.—to take this on board?”

It was suggested that we post best practices somewhere—for example, where we are on CUES, where we are on information sharing—and put it somewhere so that people can read it. The Naval War College will build, populate, and provide you the access to probably a Web-based lessons-learned site, a repository of best practices.

We’ll have this done, certainly well within six months. We’ll get it out to you. You’ve registered here. We have a point to get those data out to you. Then, we will allow you access to this site.

High-end topics—I will push to include an opportunity in this forum to continue talking about energy, its security and access; and the Arctic, from the security perspective, where and what may be a threat, and where an international solution applies. The fact of the matter is there is ice there today; there’s going to be an ocean tomorrow—it’s going to be sometime. We’re going to have to deal with it. We ought to understand and shake out the implications to a point that we are satisfied. There may be other high-end issues that we talk about, but those are two that I think are worthy.

We need to come forward with tangible solutions, where they need to apply in our respective regions, or globally. I think that’s how we move from here. We’ll move at a speed that it makes sense for all of you, and you know that none of this is binding. It’s voluntary. You wouldn’t be here if you weren’t interested in grasping

that, and becoming a part of that. We have that challenge of applying what we learned here and coming up with some solutions.

I'd like to reiterate what I said the first day. This is a continuum, one of several symposia that we have. There's the International Maritime [Security] Symposium, which was last in Jakarta. The International Maritime Defence Exhibition will be in Singapore. [Doha International Maritime Defence Exhibition](#) is in the spring. The [Regional Seapower Symposium](#)—I believe [Vice] Admiral [Giuseppe] De Giorgi [Italy] made it clear it will be in Venice in 2015. The [Western Pacific Naval Symposium](#) rotates. The [Indian Ocean Naval Symposium](#) rotates, and of course, [so does] the [Inter-American Naval Conference](#). [We have] lots of opportunities to continue talking about these matters. The next event that I'm aware of is right around the corner, a few weeks away, in Victoria, Canada, 6–9 October, the [Maritime Security Challenges](#) conference of 2014.

I will publish soon when the next International Seapower Symposium—the twenty-second—is going to take place.

I recognize we've got a lot to accomplish, but I think we're well on our way. I appreciate very, very much you all being here.

Some of you won't be here at the next International Seapower Symposium. You're changing, in one way or another, going to another chapter in your book. I pass to those of you that I've had the honor and privilege to serve with my very best wishes and [hope] that you continue to have a happy, healthful, and successful life.

Please travel safely. Please stay in touch, and remember that trust and confidence are the key words here. My very best to you. And, as Admiral De Giorgi passed along, I say the same: fair winds and following seas to all of you. Thank you very much.

APPENDIX



List of Delegates

Algeria

MG Malek Necib

Angola

VADM Francisco José

Antigua and Barbuda

Lt Cdr Elroy Skerritt

Argentina

AL Gastón Erice

CM Máximo Pérez

Australia

VADM Tim Barrett

RADM Mike Noonan

Azerbaijan

CAPT Shahin Mammadov

CAPT Abbas Qiyasov

Bahamas

CAPT Tellis Bethel

Bahrain

Col Abdulrahman Alrowaiei

Lt Col Khalid Althawadi

Bangladesh

VADM Farid Habib

RADM Makbul Hossain

Barbados

Lt (CG) Mark Peterson

Capt Brian Roberts

Belgium

RADM Michel Hofman

RADM (LH) Georges Heeren

Benin

CAPT Joseph Gonsallo
CFT Victorien Sinha

Brazil

AE Julio Soares de Moura Neto
CA Fernando Garcez

Brunei

DSP Aziz Tamit

Burundi

Col Manirakiza Ambroise
Maj Siga Augustin

Cameroon

RADM Jean Mendoua
RADM Njine Djonkam

Canada

VAdm Mark Norman

Cape Verde

TCor Anildo Morais
Cap ten Artur Rodrigues

Chile

VADM Humberto Ramirez
VADM Cristián de la Maza
CAPT Marcelo Gomez

China

ADM Wu Shengli
SCAPT Xie Dongpei

Colombia

ALM Hernando Wills
VALM Leonardo Santamaría
ADM Guillermo Barrera (Ret.)

Comoros

COL Said Hamza
COL Youssouf Idjihadi

Congo, Democratic Republic of the

CAPT Gregory Manga

Congo, Republic of the

RADM André Bouagnabea Moundanza
CAPT Jean Bruno Ngouono

Côte d'Ivoire

RADM Djakaridja Konate

Croatia

RADM Robert Hranj
COL Jozo Matković

Cyprus

CAPT Kyriakos Pochanis

Denmark

RADM Frank Trojahn

Djibouti

COL Wais Omar Bogoreh

Dominica

ASP Richmond Valentine

Dominican Republic

RADM Roger Mora
CAPT Benny Batista

Egypt

RAdm M. Bari
Commo Walid Morsi

El Salvador

CAPT Miguel Castillo

Estonia

CAPT (N) Sten Sepper

Finland

RADM Kari Takanen
CAPT(N) Sakari Martimo

France

Adm Bernard Rogel
CA Hervé Bléjean

Gabon

RADM Yves Keba

Gambia

Cdre Madani Senghore
Lt Cdr Alieu Sanneh

Georgia

CAPT Temur Kvantaliani

Germany

VADM Axel Schimpf

Ghana

RADM Jeff Biekro
CAPT Issah Yakubu

Greece

VADM Vangelis Apostolakis

Grenada

ASP Solomon Stafford
Supt. Dunbar Belfon

Guatemala

VADM Carlos Thomas

Guinea

CADM Zeze Onivogui

Honduras

Capitán de Navío Carlos Ochoa
CPT Jesús Benítez

Iceland

RADM Georg Lárusson
CAPT Ásgrímur Ásgrímsson

India

ADM R. K. Dhowan
CMDE Krishna Swaminathan

Indonesia

ADM Dr. Marsetio
RADM I Putu Yuli Adnyana

Ireland

Cdre Hugh Tully
Cdr Steve Walsh

Israel

VADM Ram Rutberg

Italy

VADM Giuseppe De Giorgi

RDML Salvatore Vitiello

Jamaica

CDR Antonette Wemyss-Gorman

Japan

ADM Katsutoshi Kawano

RADM Yuki Sekiguchi

Jordan

Brg Qasem Tanashat

Col Fadel Alsbaihat

Kazakhstan

RADM Zhandarbek Zhanzakov

Kenya

BRIG Charles Kahariri

Korea, Republic of

VADM Hyunseong Um

CDR Jongboo Park

Kuwait

CDRE Mubarak Alamiri

Latvia

CDR s.g. Juris Roze

Lebanon

RADM Joseph Wakim

Lithuania

RADM Kęstutis Macijauskas

Madagascar

RADM Herinirina Rakotoarison

CDRE Kalobe Sam

Malaysia

Adm Tan Sri Abdul Aziz Jaafar

FAdm Zulhelmy bin Ithnain

Malta

Brig Jeffrey Curmi
Lt Col James Grech

Mauritania

RADM Isselkou El Wely

Mauritius

CP Dhun Iswar Rampersad
DCP Mario Nobin

Mexico

VADM Ángel Sarmiento

Montenegro

CAPT (N) Darko Vuković
CDR Darko Knežić

Morocco

VADM Mohamed Laghmari
CAPT A. Maalouf

Namibia

Capt Sacheus !Gonteb
Cdr Gabriel Iiyambo

The Netherlands

VADM Matthieu Borsboom

New Zealand

RADM Jack Steer

Nigeria

VADM Usman Jibrin
RADM Henry Babalola

Norway

Radm Lars Saunes
Cdre Sverre Engeness

Oman

CDRE Al Kamashki Yaqoob

Pakistan

ADM Mohammad Asif Sandila NI(M)
RADM Abdul Aleem
RADM Ather Mukhtar

Panama

Comm Jorge Yanis

Paraguay

ALTE Silvio Guanes

Cap N DEM Elpidio Moran

Peru

VADM Jorge Moscoso

Philippines

VADM Jess Millan

RADM Butch Suarez

Poland

VADM Ryszard Demczuk

RDML Piotr Stocki

Portugal

ADM Luis Fragoso

Qatar

Brig Ali Al-Bedeed

Brig Ibrahim Al-Kubaisi

Romania

RADM Alexandru Mîrșu

St. Vincent and the Grenadines

CDR Brenton Cain

LT Ralphie Raggquette

Saudi Arabia

RADM Khalid al Saeed

RADM Ibraheem Maglouth

Senegal

Rear Admiral Cheikh Bara Cissoko

CF Baye M. Koule

Seychelles

Lt Col S. Dine

Lt Col Michael Rosette

Sierra Leone

Capt Sallieu Kanu

Singapore

RADM Lai Chung Han

Slovenia

CAPT Boris Geršak

South Africa

V Adm Mosiwa Hlongwane

Spain

ADM GRAL Jaime Muñoz-Delgado

VADM José L. Urcelay

Sri Lanka

VADM Jayantha Perera

Cmde Ruwan Perera

Suriname

LTC Marino Acton

LTC John Antonius

Sweden

RADM Jan Thörnqvist

Tanzania

Brig Gen Rogastian Laswai

Brig Gen Hamisi Issa Majumba

Togo

CDR Soukoume Alleda

Tonga

CAPT Satsi Vunipola

Trinidad and Tobago

CAPT Hayden Pritchard

Tunisia

VADM Mohamed Khamassi

CAPT Hatem Essoussi

Turkey

ADM Bülent Bostanoğlu

RADM Hakan Üstem

RADM Oguz Karaman

Tuvalu

SUPT Talafoou Esekia

Ukraine

CAPT Andrii Ryzhenko

United Arab Emirates

Staff Brig Salim AlKindi

United Kingdom

ADM Sir George Zambellas

CDRE Richard Allen

United States

The Honorable Ray Mabus

ADM Jonathan Greenert

ADM Mark Ferguson

ADM Bill Gortney

ADM Harry Harris

ADM Michelle Howard

GEN Jim Mattis (Ret.)

VADM Ted "Twig" Branch

VADM Robin Braun

VADM Ted Carter

VADM Phil Cullom

VADM Nanette DeRenzi

VADM Peter Neffenger

VADM Frank Pandolfe

VADM Joe Rixey

VADM Scott Swift

VADM Jan Tighe

LtGen Ken Glueck

RADM George Ballance

RADM Kevin Donegan

RADM Dave Gale

RADM P. Gardner Howe III

RADM Jamie Kelly (Ret.)

RADM Matt Klunder

RADM Kevin Kovacich

RADM Sam Perez

RADM Jim Shannon

RADM T. K. Shannon

RADM Dave Titley (Ret.)

RADM Elizabeth "Liz" Train

RADM Doug Venlet

RADM Jon White

RDML Bruce H. Lindsey

RDML Brian Losey
RDML Bill McQuilkin
RDML "Bob" Sharp
BGen Thomas Weidley
CAPT Mark Morin
Mr. Richard Albright
Ms. Jodi Greene
Dean Tom Mangold
Mr. Thomas Oppel
Director Kelli Seybolt
Dr. Daniel Yergin

Uruguay

Prof. Yuri Gramajo
CA Daniel Menini

Vanuatu

COL John Taleo

Vietnam

ADM Nguyen Van Hien



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